The Proliferation of 'at risk' in The Times: A Corpus Approach to Historical Social Change, 1785-2009

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Abstract: *»Die Verbreitung von ‚at risk' in The Times. Ein Korpus-Ansatz zu historischem sozialen Wandel 1785-2009«*. Examining long term social change is one of the most rewarding but time-consuming challenges for sociological research. Historical analyses are often the only way to understand present-day social conditions such as the perception and management of risk in the UK. This article reports research which breaks new ground by utilising corpus linguistic tools to examine the proliferation of risk words in *The Times* (London) from the 19th to the 21th century. The article develops a corpus sociological approach to show that socio-structural changes, institutional practices and socially relevant events have supported the proliferation of 'at risk'. The early dominance of insurance, trading and economics and the rise of epidemiology at the early 20th century has increasingly been replaced by reporting of job insecurity and lives, children, patients and people being 'at risk' in the second half of the 20th and beginning of 21st century. This time is also characterised by a dominance in reporting of people are put or putting themselves 'at risk'. These remarkable changes are accompanied by the huge increase of risk words in media coverage supporting the view that they have driven the proliferation of the 'at risk' construct in media coverage.

Keywords: Corpus sociology, risk, social change, collocations, corpus assisted discourse studies, CADS.

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1. Introduction

The examination of long term social change is often the only way to understand present day social conditions such as the omnipresence of the risk semantic. The tasks of identifying how an unlikely combination of complex forces combine into a historical development or identifying systematic patterns of historical change are rewarding but time-consuming challenges for social research. With the growing digitisation of, for example, newspaper archives, new opportunities for diachronic social research are emerging. New disciplines and research strategies have mushroomed under headings such as *digital humanities*, *network analysis* and *corpus assisted discourse studies* (CADS) and provide a rapidly growing body of data and methodologies to research them. This article reports from a research initiative[1] which is part of these developments, and examines how the risk semantic has become pervasive in modern industrialised societies.

The study rests on the assumption that social changes and linguistic changes are closely connected. For example, Niklas Luhmann (1993, 10-11) suggests that the introduction and increasing use of the risk semantic results from a new social experience which is connected to fundamental socio-structural changes during Western modernisation. However, there are several different sources of social change which might have influenced the notion of *risk* over time such as statistics and probability theory, the insurance industry, the emergence of epidemiology, risk-based management, and decision theory. There are also several competing sociological theories available to explain the proliferation of *risk* after World War Two (WWII). Ulrich Beck's *Risk Society* (1986, 1992) emphasises the influence of new mega risks such as "nuclear, chemical, ecological and genetic engineering risks" (1996, 31) or other global risks such as financial crises, international terrorism and climate change (2009) which would move risk to the centre of public debate and conflict. Followers of Michel Foucault's work on *Governmentality* (1991) such as Mitchel Dean (1999) Niklas Rose (1999) Pat O'Malley (2004) and François Ewald (1986) describe strategies to govern societies through new forms of risk knowledge which combine with normative frameworks to form new modes of domination. The *cultural symbolic* approach to risk suggested that the worldviews of social groups who operated on the fringes of mainstream society, supporting egalitarian forms of social organisation, became more influential in the 1980s (Douglas 1992; Douglas and Wildavsky 1982). While these theories outlined above form the conceptual

[1] It started with a first publication (Zinn 2010), was continued with a case study on the New York Times which was finally published as book (Zinn and McDonald 2018). The current publication bases on studies I undertook at the Corpus Approaches to Social Science (CASS) centre at Lancaster University 2016-2018.

backdrop of the study informing this article, their empirical basis to understanding the post-WWII proliferation of the risk semantic is relatively weak– the historical evidence is often anecdotal rather than systematic.

Therefore, the study suggests turning to the media since there is large agreement that the media play an important role in the public debate about risk. First, many risks cannot be experienced directly or personally, and are instead reported by experts, opinion leaders, and politicians. Second, the media are a constitutive part of the public sphere in which the media report about publicly relevant events and opinions (Starr 2004; Conboy 2010). However, even though approaches such as the *Risk Society* thesis acknowledge the importance of the media for the dissemination of and debate about risk (Beck 2000) there have been few attempts to develop a systematic approach to examining the communication of risk in the media in historical perspective (see Renn 1991; Allan, Adam and Carter 2000; Pidgeon, Kasperson and Slovic 2003), or to consider its links to social change.

In order to develop an empirical approach which allows for the historical analysis of the growing debates about risk, the article suggests understanding the proliferation of *risk* as a semantic phenomenon which can be operationalised as *risk words*[2] used in public debate. Since the usage of *risk words* indeed rapidly increased in news print media from the 1960s onwards this seems a promising approach (see also: Zinn and McDonald 2018; Zinn 2010). However, it is also important to be mindful that examining *risk* as a linguistic expression rather than a physical entity does not exclude that risks turn occasionally into physical and emotional harm and disaster. Indeed, *risk words* are always linked to concerns about serious issues.

Such a shift in perspective is also conceptually advantageous since it allows for the connection of several branches of research which have long argued that language and the social are inseparable parts of the same realm, thus viewing language as a valuable resource for examining the social as much as the linguistic. Such approaches reach from the *History of Ideas* (Koselleck 1989a, 1989b; Skinner 1971, 1988) to *Social Constructionism* (Berger and Luckmann 1966), from *Socio-linguistics* (Bernstein 1971) to Foucaudian *Discourse Analysis* (1972) and from *Critical Discourse Analysis* (CDA) (Fairclough 1992; Wodak and Meyer 2001) to *Modern Diachronic Corpus-Assisted Discourse Studies* (MD-CADS) (Partington 2010).

A comprehensive and detailed analysis of the increasing usage of *risk words* goes beyond what is possible in this article. This also includes the need to clarify the best operationalisation of the concept of 'risk' as developed in different theories. Some authors such as Beck often use the term 'risk' in a way

[2] For this study 'risk words' are defined as any lexical item whose root is risk (risking, risky, riskers, etc.) or any adjective or adverb containing this root (e.g. *at-risk*, *risk-laden*, *no-risk*; Zinn and McDonald 2018, 70).

which is closer to the linguistic understanding of 'danger' or 'threat'. Therefore, a much more complex approach which considers different and competing linguistic expressions for competing spheres of meaning such as 'risk', 'danger', 'peril', 'threat' etc. is required to clarify the dynamics of meaning in language (for example: Hamilton, Leskovec and Jurafsky 2016).

Instead, this article restricts the analysis to a specific but important part of this discourse semantic phenomenon (Zinn and McDonald 2018). This is the proliferation of the 'at risk' compound (with and without hyphen). The article examines the meaning of this construct and the contexts in which it occurs. Through the analysis of such a long time span (about 200 years) it should be possible to trace any changes in the meaning of risk or to identify social developments which influence the use of the 'at risk'-compound.

Corpus linguists have long recognised that the meaning of a word is shaped by its context. Firth (1957, 11) has famously outlined that the meaning of a word can best be understood by the company it keeps (meaning the other words which regularly occur close to it). Some linguists therefore speak about 'co-text' in contrast to the social 'context' which refers to the social world more broadly. Sinclair (1991) developed the now common concept '*collocation*' which guides the empirical research outlined in the following. Technically, collocations calculate the relative frequency of occurrence of a word close to another compared with the rest of a text under examination (compare method section). In this study these quantitative analyses are combined with fine grain qualitative analysis of the concrete co-texts in which words occur, known by linguists as '*concordances'* (Baker 2006).

More concretely, the article reports about a research initiative which uses *collocations* to identify the most frequent statistically significant co-occurrences with the 'at risk'-construct in *The Times* (London), and combines them with fine grain qualitative analysis of concordances to find out about the events, institutional practices and sectorial changes which foster the use of the 'at risk'-compound. Thus, the purpose of the study is less a detailed linguistic analysis than it is an examination of the link between social and linguistic change. The study is therefore driven by the needs of a *corpus sociology* and its interest in institutional change rather than (corpus) linguistic traditions of inquiry.

The article begins by revisiting debates about the notion of risk in risk studies and suggests understanding risk as a discourse-semantic that can be used for the exploration of social change. It justifies the selection of 'at risk' as the focus of concern and *The Times* archive as a case study for the analysis of historical discourse-semantic change. In 'The Study'-section the article outlines the research design and the linguistic tools (collocations, concordances) and statistical measure (log likelihood: LL; log ratio: LR) used in the quantitative analyses. The empirical part starts by introducing sensitising concepts relate to how language and its social contexts can combine in news coverage before

presenting the empirical results. This section links the collocates to larger socio-structural changes, institutional practices and socially relevant events. Since the exposure to risk stands out in news-coverage a separate section examines the long term changes of the 'put ... at risk construct'. The last section of the empirical portion of the article examines the recent increase of the hyphenated at-risk construct. Finally, the article summarises and discusses the results before it concludes and suggests perspectives for further research.

2. The Sociology of Risk and Uncertainty

Since the 1980s and 1990s social sciences started to discover risk as a research topic. From Mary Douglas' early work on *Risk and Culture* (1990, Douglas and Wildavsky 1982) and Charles Perrow's work on *Normal Accidents* (1984) to Ulrich Beck's *Risk Society* (1992, 1999, 2009). Technological developments, their impact on the natural environment and a new quality of humanly produced risks started to inform the theorizing of a growing number of social scientists. Indeed, these publications may have been slow responses to debates which had already begun in response to events such as the publication of Rachel Carson's work *Silent Spring* (1962), a fictional reflection on the potential effects of unrestricted use of pesticides on both humans and the natural environment which had already challenged over-confidence in science and technology of the 1960s. However, at the time mainstream approaches such as Talcott Parsons *structural functionalism* still proposed a linear account of the development of knowledge, as well as social and technological advancement (Parsons 1964). In contrast, Beck (1992) suggested that a new type of risks (i.e. incalculable in both scale and duration) would erode *modern* myths which unreflexively equated unrestricted social development with progress, and were underpinned by the quintessentially modern view of risks as fully knowable and subject to rational calculation. Governmentality scholars doubt that modern rationalities such as science and insurance have been weakened, but are still successful in adapting and managing new social challenges (for example O'Malley 2008). Indeed, historical analyses of the development of statistics support the view that modern societies and the calculation of risk are fundamentally influenced by the development and successes of probability theory (Bernstein 1996; Hacking 1990). In this way risk becomes part of mathematical calculation and modelling, and through this contributed to the development of epidemiology as a scientific discipline to manage health and the risk of illness. Medical science was influenced by the success of epidemiology and as a result the notion of risk became widespread in medical journals (Skolbekken 1995). While all these approaches provide accounts of the ways in which risk rationalities have emerged and been operationalized, they are characterised by different understandings of what *risk* is about. Ultimately, they have left risk studies in

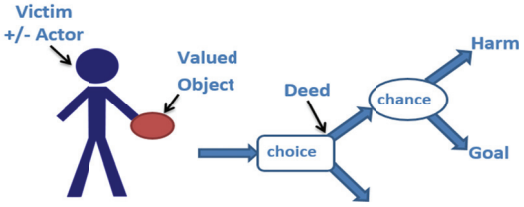
an uncomfortable situation as their defining concept remains underdefined (Garland 2003).

2.1 Rethinking 'Risk'

With the growing debates about risk in both academia and the public it became clear that the meaning of risk varies. Not only was it difficult for experts and everyday people to agree on risk (Wynne 1996, 2001; Fischhoff 1998), the *meaning* of risk remained contested both between disciplines (Renn 1992; Althaus 2005) and within a discipline (Rosa 2010; Merkelsen 2011; Aven and Renn 2009). For some risk is understood as a threat, the possibility of disaster (Beck 1992), while for others it is the challenge for a normative social framework and the worldviews members of a social entity share (Douglas and Wildavsky 1982). Others still interpret risk as being part of a (statistical) calculation (Ewald 1991). However, even within this perspective there is no consensus; some insist on the mathematical character of calculation, while others also accept tacit knowledge and rules of thumb (Dean 1999; O'Malley 2008). Debates about the definition of risk have continued and recently followed an unexpected direction (Rosa 2010; Merkelsen 2011). Specifically, some contemporary authors have contended that risk conflicts require a shared language to open technical understandings of risk to the actual use of the concept in everyday life. This insight opens research to the linguistic dimension and invites research addressing the broader social forces which shape public debates.

Such linguistically informed research mainly bases its analysis on Fillmore and Atkins' (1992) analysis of the *risk frame* which identifies the cognitive knowledge (frame) necessary to understand the concept of risk (Fillmore 1976).

Figure 1: The Risk Frame (Fillmore and Atkins 1992)



The risk frame (compare Figure 1) comprises several elements such as an event structure and participant roles. Prototypically, risk requires a human or non-human actor, who takes a choice and performs some action that may result in harm or reaching a goal. However, it remains an empirical question to what degree the various components of the frame are instantiated in a text.

Consequently, instead of assuming a particular scholarly definition of risk, this article examines the empirical reality of the *risk words* in the public sphere and utilizes the increasingly available digitized newspaper archives – here of *The Times* – to find out about historical changes in the discourse-semantics of 'risk'. Such an approach contributes to overcoming the originally narrow perspective on technological and environmental risk, contributing to a broader perspective which allows identification of the extent to which the notion of 'risk' has entered all kinds of social spheres. It also allows for examination of how institutional and linguistic changes constitute a new social reality increasingly shaped by 'risk'.

2.2 The Meaning of 'Risk'-Words as an Object of Research

Since language is a changing social practice (Sinclair 1991) rather than a static and mechanistic framework (Saussure 1916) a diachronic approach is more suitable for understanding language and social change. Consequently, the article uses risk words as 'nodes' of meaning which may differ depending on context and time. For this study a 'risk word' is defined as any lexical item whose root is risk (risking, risky, riskers, etc.) or any adjective or adverb containing this root (e.g. at-risk, risk-laden, no-risk; Zinn and McDonald 2018, 70). Such an approach is supported by the fact that the meaning of 'risk'-words differs from other words such as danger or threat. Based on historical analysis Luhmann suggested that the risk semantic became more common because of a new social experience characterised by

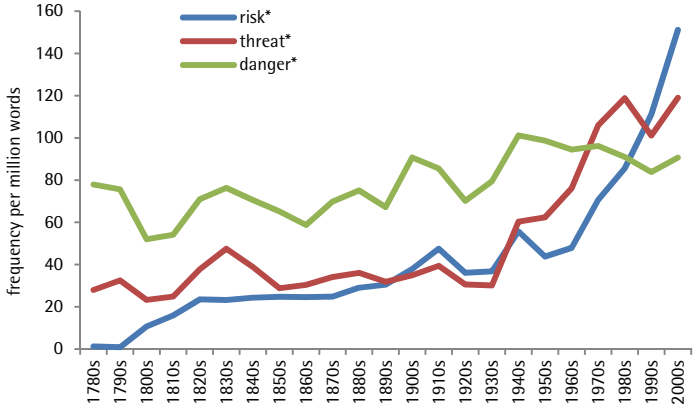
> the realization that certain advances are to be gained only if something is at stake.' He went on to contend that 'it is not a matter of the costs, which can be calculated beforehand and traded off against the advantages. It is rather a matter of a decision that, as can be foreseen, will be subsequently regretted if a loss that one had hoped to avert occurs (Luhmann 1993, 11).

Consequently, he suggested distinguishing *risk* – understood as a decision-based negative event – from *danger,* which was understood as resulting not from an observer's decision, but from external processes. This assumption has been confirmed by empirical research which showed that the use of *risk* and *danger* indeed do differ systematically (Boholm 2011). Furthermore, data from the 1780s to the 2000s[3] about the frequency of risk and related words of all articles of *The Times*[4] (which add up to about 10,6 billion words) show that risk words follow a relatively independent trajectory to 'danger' with a rapid increase from the 1950s and 1960s onwards (Figure 2; compare also for similar developments in the New York Times: Zinn 2010).

[3] The years refer to the whole decade. For example, 1790s stands for 1790 until 1799 inclusive. Only 1780s contains five years: 1785-1789.

[4] Compare methods section for more detail.

Figure 2: The Usage of Risk, Threat and Danger in *The Times* (London), 1785-2009



Supporting Beck's assumption of a significant increase in public debates about risk after WWII, the relative number of risk words occurring in *The Times* corpus rapidly increased from the 1950s and 1960s onwards. A remarkably similar development is observable with the word forms of the lemma[5] *threat*. Conceptual differences between the two have been examined elsewhere (e.g. Galantino 2017). However, different risk compounds show different trajectories. The 'at risk' construct shows a clear increase in line with Beck's assumption, although this is less steep than the increase of risk words more generally (Figure 3).

A closer look at the dynamics of the other compounds shows that the *'at the risk of'* expression was much more frequently used than all the other combinations of 'at' and 'risk' right from the early years of *The Times* (compare Figure 4). However, 'at risk' became much more frequent in the 1960s and has dominated since then while the hyphenated form of *'at-risk'* only developed since the 1980s, occurring more often in the 2000s.

Since the trajectories of all three compounds of 'risk' and 'at' differ so clearly from each other it is likely that the meaning of the semantic space that they occupy and the forces which shape them systematically differ. This article is dedicated to the analysis of 'at risk' and 'at-risk', while the case of 'at the risk of' had been analysed elsewhere (Zinn 2018).

[5] The *lemma* is the base word as the head words in the dictionary and includes all inflections. For example, the lemma of the noun 'threat' includes the plural 'threats'. The lemma of the verb 'risk' includes 'risks', 'risking', 'risked' etc.

Figure 3: Number of Risk Words in *The Times* (London), 1785-2009

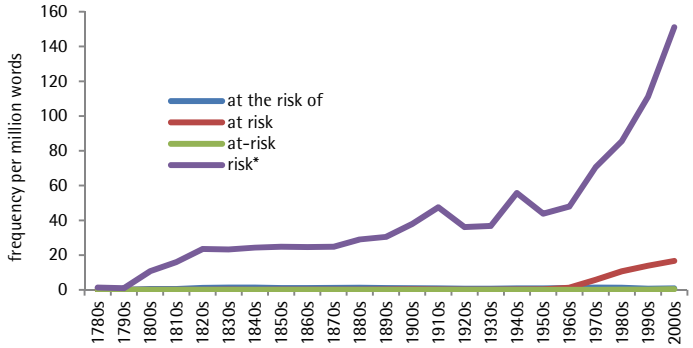
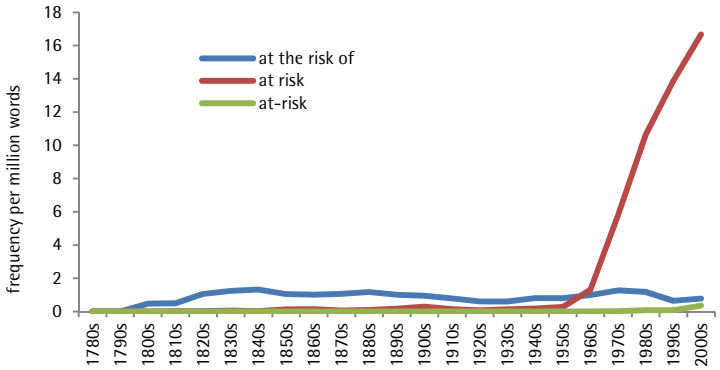


Figure 4: 'Risk' Constructs in *The Times* (London), 1785-2009



The following analyses demonstrate how *'at risk' and 'at-risk'* developed over time and pervaded new social spheres, and how social conflicts, new social practices and institutions shaped their occurrence in news coverage.

3. The Study

The study examines which words co-occur with the 'at risk'-constructs that include the hyphenised form 'at-risk' which has become the most frequent combination of 'at' and 'risk' in recent decades. In the 1900s the three most frequent combination of 'at' and 'risk' were: 'at the risk' (34%), 'at risk' (10.35%) and 'at their own risk' (5.63%) followed by a large number of cases

which each cover only one percent or less. In 2000s the three most frequent constructs were: ‘at risk’ (74.3%), ‘at the risk’ (4.41%), and ‘at owner’s risk’ (2.74%). This shift indicates homogenisation of the diversity of expressions combining ‘at’ with ‘risk’, as well as a massive increase in the use of the ‘at risk’-construct.

The study explores the themes and issues addressed in the wider contexts of sentences or paragraphs in which these compounds occur. These ‘co-text analyses’ serve to trace socially relevant events and institutional changes which made it into the news, and which shaped the linguistic presentation of the news or influenced its production more broadly. The study follows the assumption that the meaning of a word or word phrase can best be discovered by both the company of other words it keeps and the social environment it refers to. This can include events such as a terror attack, a new institutional approach to social problems, or even the organisational production of news in a capitalist economy more generally. Indeed, it also refers to the changing conditions of news production (see: Philo 2007; Herman and Chomsky 1988).

As Fowler noted (1991, 90), “there is no constant relationship between linguistic structure and its semiotic significance” and

> the significance of discourse derives only from an interaction between language structure and the context in which it is used: so the discourse analyst must always be prepared to document the circumstances in which communication takes place, and consider their relevance to the structure of the text.

Following this insight, the article establishes links between observable linguistic changes and some of the events and institutional changes underpinning them.

However, it is important to note that although the focal point of this research is institutional and thematic rather than linguistic and discursive but the study is still inspired by the growing body of research in *Modern Diachronic Corpus-Assisted Discourse Studies* (MD-CADS), as outlined by Partington (2010). This research contributes to a longitudinal study which enables identification of short-term and long-term thematic and discourse-semantic changes, and identifies the decade in which they manifest.

The study follows Hundt and Mair’s (1999) argument that newspapers provide a good means for examining changes in language. The authors contend that although key social events and institutional changes may be reported on differently by various newspapers due to their particular stance, they cannot be ignored completely by these news outlets. Therefore, traces of these events and changes can most likely be found in every newspaper as long as censorship is not suppressing reporting. Ultimately, the shared standards of newsworthiness ensure that newspapers report on the same issues and use language that connects to common discourses of the time (Fowler 1991, 41f.; Tulloch and Zinn 2011), despite variations in stance and reporting style.

The chosen case study of news coverage in *The Times* takes advantage of the availability of a newspaper archive that covers a long historical time span from 1785 to 2009, which is rarely available otherwise.[6] It also comes with several other benefits (Jucker and Berger 2014, 84). There is no need to deal with unobserved variance caused by the inclusion of different sources. There are also no issues with uncontrolled exclusion of articles for copyright reasons by providers of digitised newspapers such as LexisNexis. Newspaper-specific issues such as *The Times'* conservative political stance which colours news coverage, or organisational changes in leadership, which might influence the style and selection of news coverage, seem negligible since similar tendencies are observable in other newspapers and corpora.[7] However, there may be gradual differences between newspapers, as Duguid showed. In her analysis she found that *The Times'* prose was less 'hyperbolic' compared with the *Guardian*, *Telegraph*, *Sunday Telegraph*, *Sunday Times* and *Observer* (2010, 132, 115). Nevertheless, as a social institution amongst British newspapers *The Times* is a source of stability, and therefore might be less affected than other papers by short term changes and dynamics.

3.1 Research Design

The analysis is based on *The Times* (London) corpus as processed and made available by Andrew Hardie through Lancaster University's CQPweb server[8]. The data are based on automatized OCR recognition of *The Times* archive and therefore contain a large number of mistakes that affect in particular the quality of fine grain linguistic analysis of the earliest volumes. Joulain-Jay (2017), who examined the problem of OCR recognition mistakes of 19th century newspapers, found that errors are common but seem to smoothly spread in any issue. If there is skew in error it is towards longer words rather than shorter words what makes the analysis of short words or phrases such as 'risk' and combinations of 'at' and 'risk' less problematic than longer words and expressions. Collocation results are influenced by false negatives rather than false positives; collocate-numbers are underestimated rather than overestimated. Since the OCR errors are typically hapaxes, OCR errors are not too likely to show up as collocates themselves. Similarly, *The Times* corpus contains spelling/recognition mistakes and end-of-line splitting of words which affect the quality of the analysis. It is likely that the numbers of occurrences of specific patterns and longer n-grams in the earlier decades of the 19th century are therefore systematically underes-

[6] There are a growing number of initiatives to increase the size of historical linguistic corpora to allow detailed analysis of diachronic change (compare Davies 2012).

[7] Other UK newspapers such as *The Guardian*, *The Scotsman* and *The Financial Times* show similar tendencies.

[8] <https://cqpweb.lancs.ac.uk/>.

timated. However, since the corpus is very large it is unlikely that these issues affect collocate patterns to a large degree. The thematic analysis might be less affected where the analyses refer to the general thematic context rather than to specific linguistic expressions. Altogether, the study is underpinned by the assumption that the data still allow diachronic analyses that would be practically impossible otherwise.

The corpus consists of 23 subcorpora each containing articles from one decade (with the exception of 1780s which only consists of the years 1785 to 1789), from 1790 to 1799 and so on until 2000 to 2009. Subcorpora within each corpus were constructed using article-types as selection criteria. Although all sections were originally included large numbers of advertisements tended to bias the analysis due to their frequency, and therefore skewed the analysis of general linguistic changes. Even though these analyses were somewhat helpful for understanding how institutional backgrounds such as a new legislation can directly influence the use of risk words, for further analyses the inclusion of articles was restricted to reduce advertisement and exclude sections which have marginal occurrences of risk words. The more detailed analysis included the following sections: Arts, Business, CourtSoc, Editorial, FeatureOpinion, Law, Letters, News, NewesInBrief, Official, Politics, Property, PubMatter, Reviews, Sport. The following sections were excluded: Births, BizAppoint, ClassifiedAd, Deaths, DisplayAd, Index, Marriages, Obituaries, PicGallery, StExTables, Weather. Furthermore, a television series title *At the Risk of Our Lives* skewed the calculations since it was mentioned repeatedly in the program overview in the 1990s. These cases (f=12) were also excluded from the analysis. Altogether the corpus consists of 6,803,359,769 words which include 429,831 risk words, 27,170 instances of *'at risk'* and 388 instances of the hyphenated *'at-risk'* construct.

3.2 Methods

The analysis is based primarily on *collocations* (Sinclair 1991; Baker 2006) which allow for the exploration of the co-occurrence of words that appear close to other words. Following the suggestion of Evert (2005, 2009) the article uses the term *collocations* to characterise an empirical phenomenon (statistical collocations). After a number of tests, it turned out that a collocation window of +/- 3 words missed out on a number of important patterns. The window was therefore increased to +/-5 words. The analysis focuses on 'at risk' as a fixed construct (74% of all occurrences in 2000s). Since the use of the 'at risk'-construct mainly developed from the 1960s to the 1970s, the frequencies are only high enough for detailed collocation analysis from the 1970s onwards.

While designing this research it was important to consider which measure to use to determine the difference between the frequency at which a word occurred in the corpus, and the frequency with which it occurred close to the node

(meaning here in the +/- 5-words window around 'at risk'). Linguists are particularly interested in the effect size, meaning how much more often a word occurs as collocate than in the rest of the corpus. This often results in a large number of low frequency collocates populating the top ranks in a collocation list. It indicates that when they occur, collocates occur in company of the node, and appear less elsewhere in the corpus. In sociological terms this means there might not be many occasions when the word 'hazard' is used in 1830s (indeed, it only appears 293 times), but in five cases it is accompanied by 'risk', making it more likely to occur with 'risk' than elsewhere in the corpus. Statistically, it is more than 512 times more likely that 'hazard' occurs together with 'risk' than elsewhere. However, sociologists are interested not only in specific low frequency occurrences, but in whether issues which are frequently in the news show affinity to 'risk'-words. For example, in the 1880s 'life' occurs 130609 times in the whole corpus and only 128 times in the collocation window. However, it is still 32 more likely to appear in the collocation window than in the rest of the corpus. This means 'life' is a comparatively high frequency word in the whole corpus compared to others, and has a particular affinity to risk words despite the fact that it also occurs in another context. The reason for this is that news media commonly report risks that are serious enough to pose a threat to life.

Since both cases are of interest the study used two measures, one (*log ratio, LR*) which is sensitive to low frequent but very typical words (they are much more likely to occur only in the context of risk words) and another which focuses on the statistical significance of the difference and is more sensitive to high occurrence words since they provide more 'evidence' that a difference is systematic rather than accidental (*log likelihood, LL*). The LL measure has often been criticized for overemphasising grammatical words (Baker 2006, 102). However, for this study it seems useful to have a measure which emphasises high frequency content words (here the focus is on nouns) which represent general discourses in the news as well as reoccurring topics.

The common measures for the association of linguistic entities such as Mutual Information (MI), Z-Score, Dice-Coefficient and LL mainly differ regarding if and how they measure and combine statistical significance and effect size (compare for a discussion of collocation measures: Baker 2006; Evert 2009). This study used the LR measure provided on CQPweb (Hardie 2012) which calculates the difference between the (relative) frequency of the collocate alongside the node, and its (relative) frequency in the rest of the corpus. Instead of comparing the relative frequencies of one corpus with another to identify how much more often an expression occurs in one compared to the other cor-

pus, LR compares the binary logarithms ($\log_2$ n)[9] of the relative frequencies. When the relative frequency in the collocation window is the same as in the rest of the corpus the LR value is '0'. When it is '1' the relative frequency is two times more in the collocation window than in the rest of the corpus. '2' stands for a relative occurrence that is four times greater, '3' stands for that it is eight times greater, '4' stands for it is 16 times greater and so on. Every extra point of LR score stands for a doubling in size of the collocates' frequency near the node and its frequency elsewhere (Hardie 2014). CQPweb combines this effect-size measure with a statistical-significance filter. The list of collocates is sorted by log ratio but filtered using LL calculations. They are only included in the analysis when significant at the 5 per cent level ($p < 0.05$)[10] adjusted using the Šidák correction (Hardie 2017). However, for the inclusion in the qualitative and quantitative data presentation in tables and in the appendix which provides LL and LR measures for every word, corpus size, number of words in the whole corpus and number of words in the collocation window (OCF). The order in which they are presented in the table follows the degree of statistical evidence provided by LL, but the LR values are added to give a sense for the 'effect size' as well (how much more often the word occurs in the collocation window than elsewhere').

Finally, when the number of concordance lines of a collocate was too large (>500) for detailed analysis, a random sample was extracted automatically, using CQPweb (f=100), and analysed in more detail. The random selection tool also served for the selection of examples for presentation.

4. A Historical Perspective on 'at Risk' in *The Times* (London)

The question of how social and linguistic change interrelate in the (print) news media is subject to ongoing debate, and little consensus. Research on risk and the media has shown that reporting on risk issues does not follow scientific criteria which define the objective severity of risks in terms of the relationship between gains and harm and likelihood of occurrence (e.g. Kitzinger 1999). There are also too many issues that they could be reported in the media at once. Therefore, the media have developed their own criteria of newsworthiness. However, these different factors combine and interact in complex relationships

[9] This is the power to which the number 2 must be raised to obtain the value n: $2^x = n$. The binary logarithm of 1 is 0, the binary logarithm of 2 is 1, for 4 it's 2, for 8 it's 3, and so on, for 64 it's 6, for 128 it's 7 etc.

[10] This means the likelihood that the null-hypothesis that there is no statistical significant difference between the occurrence of a word in the collocation window compared with the rest of the subcorpus of a decade is wrongly rejected.

that make it unlikely that a universal theory can easily be developed (Renn 1991).

Indeed, reviews of the research on newsworthiness have identified a number of factors influencing the likelihood that risk issues will enter the media. These accounts provide an indication of *what* is reported, even though they do not indicate whether such issues are reported using *risk words*. For instance, it has been suggested that many deaths at once (e.g. major disaster) rather than silent and slow deaths (e.g. traffic accidents rates) are more likely to make it into the news, and that bad news is more likely to be reported on than good news. Similarly, risk issues are more likely to be reported if they affect famous people, and unusual risks which provide good picture material or come with a 'human face' are more likely to be reported on than everyday or general risks (Kitzinger 1999). For the purposes of the present study it does not seem helpful to attempt to provide a comprehensive list of factors that influence which issues make it into the news. More interesting is the insight that the media write for an imagined audience, and that journalists write on issues that they consider important for this audience (Conboy 2010; Kitzinger 1999). As Kitzinger and Reilley summarize:

> Individual stories will attract attention when there are decisive scientific statements, major disasters, fresh human-interest stories, official reactions and/or when major organisation or governments come into conflict over the extent of the danger. (Kitzinger and Reilley 1997, 344).

It can be added that a social problem requires a link to a more general social discourse in order to get in the centre of public debate (Loseke 2003). For example, highly socially valued groups, such as children, are more likely to make it into the media when exposed to risk since they are generally considered vulnerable and in need of protection. As a result, a historical analysis of 'at risk'-issues will not provide information about the major risks which threaten a society at a specific time. It will instead provide an overview of the issues that have been central to public debate.

In the following, the study assumes that besides the media itself, there are at least three social layers which shape the use and meaning of risk words. The first layer refers to *risks as concrete events*. These are, for example, a ferry disaster, a railway crash, BSE, the oil crisis, public inquiries into fatal child abuse cases, as many other disasters and significant social events which the news media frame using the term 'at risk'. Such socially 'traumatic' or 'defining' events become part of the sociocultural knowledge, which informs public debates and expectations towards the future.

The second layer refers to *risks as managed by institutions* and *institutional practices*. Institutions are tasked with managing specific social problems. For example, in the case of child abuse an at-risk register was established to help social workers protecting children. However, the at-risk register itself became a

focus of debate considering whether it is an efficient tool for dealing with the battering, abuse and neglect of children.

The third layer refers to general *socio-structural changes* that took place in the 1980s with a transformation of the economy, increased deregulation and loss of the standardised full time lifelong employment pattern and were accompanied by the miners' strikes at the end of the 1970s and early 1980s. Another example is the introduction of efficient contraception in the 1960s and 1970s which changed the reality of family planning and the risk of unwanted pregnancy.

These layers serve as sensitising concepts (Blumer 1954) which guide the following analyses. They are the socially significant disasters and social events, the institutional practices, the broader socio-structural changes and the process of news production which all connect to the notion of risk and the use of risk words. The analysis falls into four sections. It starts with the analysis of who or what is presented as being *at risk*. It moves on with the analysis of the shift in the verbal expressions most frequently co-occurring with 'at risk' before it explores the social contexts in which the hyphenation of 'at-risk' entered the discourse.

4.1 The Early Years, 1785-1899: Broad Usage and Institutionalised Practices

During the 19th Century 'at risk' occurred infrequently in the news coverage of *The Times*, and there was no specific context of usage. The 'at risk' construct was typically used to describe the severity of possible futures. However, there was some clear variation in character and severity of the risks that it referred to. Some examples of its use at this time include "*put at risk the nation itself*" and "*at risk of life*" as well as "*at risk of further costs*", "*own salvation*" or "*your displeasure*". The variety of instantiations present at this time cover almost all of the forms that are observable a century later.

There are particularly large numbers of occurrences in the 1850s and 1860s. These occurrences are mainly due to classified advertising which refer to the *'at risk'* construct from the 1855 to 1869: "*Goods to be at risk of the consignees from ship's tackle, and no damage allowed unless pointed out before they leave the ship*" is part of common announcements which offer to carry goods or persons by ship.

Another announcement became more frequent in the 1880s: *"The net amount insured upon goods and freight"* of which a proportion *"remained at risk on December 31"* or similar formulations. They occur in the section *"Money Market and City Intelligence"* and refer to insurance companies' announcements about their business at the end of year. When used in this context the form 'at risk' is instantiated as part of the economic calculation of gains and risks accounted for.

These examples show that even though *'at risk'* has not entered the articles written by journalists in large numbers, the concept was already in use in expert contexts related to insurance and trading, as proven by the advertisements. This finding confirms what other scholars have suggested on the basis of anecdotal historical evidence (Luhmann 1993; Giddens 2000) while also illustrating how this phrase has become part of broader social practice. In the following decades, as the next section shows, *'at risk'* became a common expression in economic contexts.

4.2 The Dominance of Economics and the Rise of Epidemiology, 1900-1959

The overview of the ten strongest collocates of *'at risk'* from the 1900s onwards shows that until 1959 there was a remarkable focus on expressions linked to seaborne trades such as freight and cargo. Cargo almost always occurs together with freight in the idiom "cargo and freight at risk". 'Strong' means that these collocates are amongst the most frequent, but also that they occur comparatively more often in the collocation window (five to one words before the node 'at risk') than elsewhere in the corpus. For example, freight with a log-ratio value of 12.092 in 1900 occurs 4096 times more often close to 'at risk' than elsewhere in the corpus. The others occur between 32 and 256 times more often in the collocation window than elsewhere in the corpus (compare for an overview appendix one).

Further collocates refer to economic issues such as 'amount', 'property', and 'value' and in the 1950s 'capital' and 'amount'. In contrast to the earlier occurrences as part of advertisements, 'at risk' became a more broadly used expression in news coverage on economic issues. In the 1960s 'sums', 'money', 'amount' and 'capital' were still amongst the ten most (statistical) significant collocates with the highest effect size (LR, compare appendix).

Examples from the 1950s are:

- There was private capital which was not **at risk** but which had a guaranteed, reasonable rate of income in a corporation which was the result of the policy … (1950_11_01).
- In this way the amount which the discount-market has **at risk** has risen by a relatively substantial figure. (1951_03_01).
- … a matter of a little over 3 per cent net on the total capital and reserves **at risk**. (1954_05_17).
- … amounting to 515,341, were appreciably below those of the previous year, in spite of a larger sum **at risk** (1955_04_28).
- The grower, with crops of high value **at risk**, seeks ease of mind by paying a premium upon an insurance policy. (1957_03_25).

Table 1: Objects 'at Risk' Noun Collocates in *The Times* (London), 1900 to 2009

1900s	1910s	1920s	1930s	1940s	1950s	1960s	1970s	1980s	1990s	2000s
freight	amount	amount	amount	amount	capital	sums	jobs	jobs	jobs	jobs
amount	value	sums	sum	values	popula-tion	popula-tion	children	lives	lives	lives
cargo	amounts	sum	popula-tion	amounts	values	lives	lives	children	children	children
amounts	property		sums		sums	money	people	people	patients	patients
value	sums		amounts		amount	life	patients	patients	buildings	people
property	freight		value			people	workers	babies	people	home
interests	capital		property			amount	child	women	safety	health
						capital	babies	safety	women	buildings
						women	future	child	life	safety
						mothers	life	health	health	homes

There is only one exception to the dominance of economic issues amongst *at risk*-collocates prior to the 1950s. The notion 'at risk population' peaked in the 1930s (LR: 8.2) and 1950s (LR: 8.2) and is still amongst the ten strongest collocates in the 1960s (LR: 6.5). These developments are due to the rising epidemiology discipline that linked a technical understanding of 'population' taken from statistics and probability theory to 'at risk'. Indeed, in the 19th century record keeping of deaths and illness provided both the means and stimulus for the nascent discipline of epidemiology. However, the transition from the landmark study conducted by John Snow who examined cholera outbreaks in London in the mid-1800s to the development and institutionalisation of epidemiology and epidemiological reasoning in public debate took another century. The expression 'at risk population' in the early 20th century is mainly bound to the context of research, a scientific report and as part of a measure or calculation. These early articles typically explained the calculation, and some of them contained discussion of methodology.

- It is impossible to estimate how many more cases will be notified, but as the polluted supply was geographically limited and the population **at risk** was no more than one-twentieth of the total population of the borough, it is not anticipated that they will be numerous. (1937_11_13).
- This total of 15 in six years seven months, with an average population **at risk** in the neighbourhood of 6,000, gives an annual suicide rate of 38.0 a 100,000 living Oxford University students. (1953_09_05).
- The impression that ulcers occur more often in young men is due to a failure to take into account the relative size of the population **at risk**. (1957_05_10).

In the 1960s the construct is exclusively used in articles reporting on health issues.

- That an environmental factor may be of importance is further suggested by the fact that among the South African-born patients more than 50 per cent had spent some time in Europe, while only about 5 per cent of the South African-Boer population **at risk** had visited Europe. (1961_02_03).
- He expected to provide a routine service by the end of the year for at least half the population who were **at risk** (1966_05_23).
- The Women 's National Cancer Control Campaign says that about two million women are being screened annually, but this is only one-ninth of the population **at risk** down to the age of 25. (1968_04_18).

However, the notion of a 'population' being 'at risk' gained a foothold in the socio-cultural repertoire of the society and has been used regularly ever since. In the 1970s the expression 'at risk population' started to spread to other contexts. For example, to the context of crime (prison population, poverty of prisoner families), war, financial fatigue, and the safety of women. Since the late 1980s the concept is also used to address the risk of hunger and starvation of people in the Global South. In the 1990s there are increasingly more reports on animal populations that are threatened or at risk of extinction, whether in general reports on endangered species or specific cases such as bears in Poland or ladybirds in the UK. Finally, in 2006 the first article uses the concept when reporting on global warming.

The combination of 'at risk' with 'population' illustrates how a construct from a specialized technical scientific context is first introduced and how over time it becomes part of the socio-cultural knowledge and is therefore routinely used without mention of the detailed calculation of the likelihood of illness or an undesired event in general. The examples also show how the use of the concept in a growing number of institutional contexts first broadens and finally spreads to all kinds of topics, moving away from humans specifically to also refer to animals and other issues. While in some cases epidemiological research no longer explicitly underpins the text, the notion of a population at risk is nevertheless defined by a potentially identifiable set of risk factors.

Altogether, the early 'at risk' pattern with the high frequent use in economics issues started to shift during the 1960s. A new discursive regime[11] has replaced the old orthodoxy.

[11] I use the phrase 'discursive regime' to characterise a mix of different discourses in contrast to the dynamics of single discourse patterns.

4.3 A New Discursive Regime and a Growing Diversity: 1970 to 2009

The years from the 1970s onwards show a surprising stability across the first four collocates, 'jobs', 'lives', 'children', and 'patients'. They represent central public concerns, debates and discourses related to 'at risk'. The following more detailed analysis shows that sometimes these 'knots' of public debate are underpinned by central changes in a whole sector, and that sometimes several key issues combine. Social institutions and the practices that they employ to deal with specific issues can foster the use of a particular 'at risk' language. A collocate can occur frequently in high numbers close to 'at risk', but the themes and contexts responsible for the instantiation of 'at risk' can shift over time. Thus, discourses are an expression of what is most valued in a society and therefore reported on more than other topics. The following table gives an overview of the objects 'at risk' noun collocates in the 1970s to 2000s while the following fine grain analysis addresses the ten most frequent collocates.

Table 2: Objects 'at Risk' Noun Collocates, 1970s to 2000s

1970s (N=13285)[12]		1980s (N=27500)		1990s (N=35275)		2000s (N=52690)	
jobs	[10.16][13]	jobs	[12.95]	jobs	[10.80]	jobs	[8.16]
children	[9.71]	lives	[7.13]	lives	[7.94]	lives	[8.83]
lives	[4.74]	children	[6.69]	children	[6.92]	children	[9.28]
people	[6.70]	people	[7.05]	patients	[3.86]	patients	[3.66]
patients	[2.56]	patients	[3.24]	buildings	[3.15]	people	[7.69]
workers	[3.24]	babies	[1.85]	people	[6.15]	home	[5.52]
child	[1.96]	women	[3.42]	safety	[1.64]	health	[3.00]
babies	[1.13]	safety	[1.60]	women	[2.55]	buildings	[1.59]
future	[2.56]	child	[7.75]	life	[3.12]	safety	[1.82]
life	[2.79]	health	[1.89]	health	[1.93]	homes	[1.61]
women	[2.26]	public	[2.58]	babies	[0.91]	women	[2.28]
security	[1.73]	funds	[1.56]	species	[0.91]	life	[3.25]
public	[2.63]	life	[2.29]	public	[2.13]	babies	[0.91]
health	[1.51]	security	[1.64]	child	[1.39]	child	[1.63]
seats	[1.35]	population	[1.05]	future	[1.56]	heritage	[0.95]
families	[1.05]	future	[1.56]	money	[1.79]	public	[2.16]
population	[1.13]	groups	[1.20]	heritage	[0.77]	areas	[1.25]
values	[0.90]	families	[0.87]	passengers	[0.74]	species	[0.82]
place	[2.11]	passengers	[0.73]	home	[2.24]	elderly	[0.76]
money	[1.51]	pits	[0.51]	livelihoods	[0.31]	stability	[0.61]
value	[1.28]	workers	[0.98]	birds	[0.65]	future	[1.27]
funds	[1.05]	cultures	[0.36]	areas	[0.99]	workers	[0.82]

[12] Number of words in collocation window, left five words of the node 'at risk'.

[13] Frequency per 1000 words in the collocation window, left five words of the node 'at risk', sorted by LL values.

elderly	[0.60]	species	[0.51]	cattle	[0.48]	patient	[0.63]
democracy	[0.60]	buildings	[0.69]	security	[1.02]	families	[0.70]
survival	[0.53]	money	[1.42]	families	[0.68]	livelihoods	[0.25]
strategy	[0.60]	nation	[0.65]	wildlife	[0.48]	economy	[0.76]
amount	[0.90]	seats	[0.84]	homes	[0.77]	security	[0.89]
homeless	[0.38]	place	[1.42]	place	[1.30]	animals	[0.55]
safety	[0.60]	industry	[1.16]	population	[0.48]	youth	[0.55]
human	[0.68]	mothers	[0.33]	elderly	[0.37]	mothers	[0.42]

The overview clearly reflects a number of key issues such as minor strikers and economic transformation ('pits', 'industry') in the 1980s, the BSE crisis ('cattle') and railway and ferry disasters in the 1980s and 1990s ('passengers') and Britain going to war ('troops') and the global financial crisis ('homeowners') in the 2000s. However, the following analysis addresses the central social issues which have had a significant qualitative and quantitative impact on the use of the 'at risk'-compound. The number of occurrences become relatively small already within the ten strongest collocates (compare relative frequencies, Table).

4.4 Jobs 'at Risk' in the Working Society

With the end of the *golden age* of Welfare Capitalism (Esping-Andersen 1996) during the mid-1970s work and employment *'at risk'* has become a key social issue. As a result, 'jobs' are by far the most common collocate of *'at risk'* in *The Times* from the 1970s to 2009 (1970s: f=135 [10.16 words per thousand in the collocate window left 5 to left 1 before the node], 1980s: f=356 [12.95/k], 1990s: f=381 [10.80/k], 2000s: f=430 [8.16/k]). However, the co-text of *'jobs at risk'* changed over this time. The dominant key words of the '*jobs at risk'* articles of the decade (compared to all articles of the decade) show that issues of productivity, inflation and tax are central to the debates amongst industry, the unions and the government. With the economic crisis further advancing and the conflicts between unions, industry, and government culminating, the context of *'jobs at risk'* shifts during the 1980s. For Britain the conflict between the mining Unions and the Prime Minister Margaret Thatcher has been central to the debates in the early 1980s up until the great miners' strike in 1984. However, the strike was unsuccessful and many coal mines were closed one after the other, as in other European countries. A keyword analysis[14] helps to illustrate the point. The keywords in the articles on 'at risk jobs' are union, industry, coal, strike, dispute, steel government, worker, minor, labour, redundancy, trade and closure etc. while the key actors in the debates are government, industry, labour and Union(s). However, after the 1980s reporting on strike and

[14] This is a comparison of the articles of this decade with all articles the other articles of the corpus and singles out the articles which occur significantly more often in this particular decade (Baker 2006, 121ff.).

dispute decreases and disappears while losses, redundancies and cuts become more prominent.

The 21st century indicates a further shift in public discourse. Less and less key players of industrial conflict such as 'Government', 'Industry', 'Labour' and 'Union' are at the centre of news coverage. The debates broaden. Terms such as 'million', 'billion', 'group', 'company', 'sales', 'profits', 'business', 'retailer', 'chain', and 'operator' started to dominate, as well as 'cuts' and 'staff' more generally complementing 'workers'. There are clearly positive economic phrasings which accompany 'cut(s)'. The reporting of the decade focuses much more on the business and company level, the successes and failures and the need for cuts to survive in a competitive global market environment, rather than conflicts between institutionalized players such as the unions and the state. The debate also broadens from the dominance of steel, coal and mining, which had dominated the decade of the minor strike (1980s), to workers and staff more generally.

It is worth noting the moral underpinnings in which strike action is presented as putting companies and jobs 'at risk'. Some authors argued that Margret Thatcher was able to shift the perspective on mining in public debate and frame mining as a risk to economic competitiveness and strike as morally irresponsible (Arnold 2016). This also justified a growing number of redundancies due to pit closures as part of a necessary economic restructuration.

For the 1980s:

- Those who decided to stay on strike should know they are putting all jobs at Jaguar **at risk**, not just their own. (1980_04_24).
- Uncertainty surrounds the delivery of the remaining 15 John Brown turbines, however, because of the company's lack of rotors, which are normally supplied by General Electric of the United States, and now denied it by the sanctions. The British company has said that 1,700 Glasgow jobs could be **at risk**. (1982_09_01).
- A further 7.000 jobs could be **at risk** and Mr Eaton gave a warning that there could be additions to the closure programme so far announced if the management found it necessary to close more pits. (1985_07_04).

For the 2000s:

- The announcement, expected today, is likely to amount to the biggest one-off redundancy in Britain for years. Paul Murphy, Secretary of State for Wales, said that 5,000 or 6,000 jobs were directly **at risk** in Wales and many thousands more in linked service industries. (2001_02_01).
- At the same time Unilever is reappraising its group structure, criticised by some for being too big and excessively complex. The restructuring will save about 700 million (460 million) by 2006, at a cost of 850 million. Mr FitzGerald would not reveal how many jobs were **at risk** but said there would be a "significant reduction in man agreement levels" (2004_07_29).

- Certain lenders hold "blacklists" of jobs considered **at risk**. Anyone in one of these jobs will find it almost impossible to secure a loan from these lenders. (2009_09_05).

That jobs are 'at risk' in a competitive economic environment has become a normal social experience reported on in *The Times*. The increased focus on companies and their economic success and failure in a globalised economy and the exposure of employees to risk relatively independent of the economic sector is an indication of this change. A key characteristic of today's *working societies* ('Arbeitsgesellschaft') is job insecurity or *'jobs at risk'*.

A broader change in the social realm accompanies this economic shift. The high occurrence of 'lives' as a strong collocate of 'at risk' indicates that risk is not only mobilized in the context of the economic foundation of human existence, but of life itself.

4.5 We and Others Put Lives at Risk Unreasonably while Professionals must Safe Us

Since the 1960s 'lives' is one of the most frequent 'at risk' collocates (1970s: f=63 [4.74/k], 1980s: f=196 [7.13/k], 1990s: f=280 [7.94/k], 2000s: f=465 [8.83/k]). This is not surprising since 'lives' expresses a general idea that refers to all kinds of thematic areas. 'Lives' stands for the seriousness of an 'at risk'-situation. Indeed, only 'jobs' is a stronger collocate with a slightly higher effect size and log likelihood value.

There are two central ideas: (1) people unreasonably put their own lives at risk or (2) other people or particular circumstances expose people unreasonably to risk:

- "Members of the Royal Family, successive prime ministers and the world 's most famous entertainers have had their lives put **at risk** by the BBC failing to deal with the threat of potentially lethal asbestos dust, it was claimed last night" (1988_09_14).
- "Health chiefs issue urgent warnings over dangerous lifestyles among young and old in Britain Teenagers put their lives **at risk** with drug taking and sex. YOUNG people are experimenting with sex and drugs at an earlier age than before, putting their health and even their lives at risk, the Government's Chief Medical Officer said yesterday." (1994_09_22).
- "The move comes after a series of cases in which patients have been killed, or had their lives put **at risk** by doctors protected by the medical profession" (2000_06_02).
- "Tens of thousands of children are placing their lives **at risk** by not learning to swim properly" (2003_08_01).
- "There is also reason to believe that their lives are **at risk** as a result of a request to the Imam for judgement by Muslims in Britain." (2008_02_15).

A particular concern is the National Health Service and patients which are discussed later in more detail. They are presented as the result of insufficient funding of health services and overworked doctors. Other issues are concerns about the impact of industrial action on service delivery and subsequently on patients' health.

In contrast to unreasonable exposure to risk, *The Times* also reports on 'heroic' risk taking by professionals such as police officers, soldiers, fire fighters and in-sea rescue workers. The major issues addressed by these articles is how society deals with professional workers who put their life at risk for others, and that such professionals should be recognized and supported:

- "On Poppy Day, we all need to reflect that our soldiers are putting their lives **at risk** for us" (2007_10_29).
- "I didn't think I would ever be free or see my family again, and I can only thank the [Bulgarian] police who put their own lives **at risk** to save me" (2005_12_22).
- "Servicemen and women are paid to put their lives **at risk** on behalf of the nation and we have a duty to provide them with the best equipment we can afford" (2000_10_25).
- Or the reporting about the documentary: "BRAVE MEN OF THE SEA. They are a special breed of men, who go out in boats when the seas are angriest, and willingly place their lives **at risk** so that the lives of others, perhaps less worthy, may be saved" (1981_12_21).

'At risk' is mainly selected to report on situations where people are exposed to risk for different reasons but the story emphasizes that the exposure is undesired, unnecessary, or foolish. The exceptions are the debates about the social acknowledgement of professional risk takers which engage with risk as part of their professional duty. This contrasts with the historically earlier occurrence of the 'at the risk of' construct which was widely used in news coverage not only to report on professionals' heroic activities, but also to report on laypeople who engaged in heroic or altruistic acts in the 18th and 19th century (Zinn 2018).

4.6 Children's Exposure to Risk by Parents and Carers and Institutional Responses

A large number of stories about children make it into the news since children are of high social concern and value. They tend to mobilise high emotions, and their protection is underpinned by strong social norms. There are also several national and international organisations, state institutions, charities and others keeping the debate about vulnerable children in need of protection going. This concern about children in general is reflected by the co-occurrence of 'child' and 'children' close to 'at risk' (1970s: f=129 [9.71/k], 1980s: 184 [6.69/k], 1990s: f= 244 [6.92/k], 2000s: f= 489 [9.28/k]).

There are two typical domains of concern in the news:

1) Parents and carers who expose children to risk and the (failure) of institutional practices to prevent it.[15]
2) All kinds of factors influencing the health and illness of children, including parent's ignorance.

Child abuse cases have for a very long time made it into the news and kept the public debate about how to prevent them going. The Department of Health, Child Services and politicians alike are involved in public debates. Articles typically refer to reports or audits of social services or inquiries into the death of a child, regularly proving long term neglect and abuse even when under the protection of social services. The difficulties and desire to protect children, as well as the under-resourcing of services, are ongoing issues reported on in the media referring to the '*children at risk'* construct.

The debates often highlight what is emotionally particular revolting, that the adults who are tasked with providing protection and care to children, their parents and care takers, are often the sources of abuse and neglect (ONS 2016). The titles of a number of reports as well as television programs using the *'at risk'* phrase prove the widespread social concern about children, and that the '*at risk*' phrasing has become common place in both institutional practices and the reporting of them. Driven by the intense reporting of child abuse cases '*children at risk*' have become part of the memorable cultural repertoire of recent British history. Typically debates focus on the institutional management of issues which put children at risk and what measures could prevent it.

- "The scale of the work has greatly increased. Numbers of children **at risk** are growing and the categories of abuse have been widened by Department of Health guidelines" (1990_09_26).
- "A baby died after three months of cruelty at the hands of his mother and her lover although he was on the social services register of children **at risk**, Norwich Crown Court was told yesterday" (1981_11_12).
- "A Bill giving social workers greater powers to protect children **at risk** from abuse is planned for the autumn. The Bill has been delayed pending the outcome of the Cleveland inquiry into child abuse, ..." (1988_06_06).
- "A second survey, commissioned by the health department and leaked to Public Eye, showed that more than 2,300 critically ill children were cared for in adult intensive-care units in 1991. The shortage of resources is putting children **at risk**, it says" (1993_05_28).

However, public debate, the regulators and NGO's not only deal with obvious cases of mismanagement. Child protection is under continuous public scrutiny and whatever happens there are repeating inquiries which examine the causes of social work organisations failing to prevent neglect and abuse of children

[15] Noteworthy is the recent shift from risk based management to more comprehensive approaches supporting families using voluntary help.

(Parton 2004). The discourse reflects well that voluntary help and a broader approach to children '*at risk'* is important. This was already mentioned in the 1970s throughout to the 2000s when the argument intensified that a mere risk approach focussing on high risk children is insufficient. Instead, articles reflect professional debate that there is a need for both a better collaboration of social workers and social work organisations while a more comprehensive approach to children is required that addresses all kinds of needs of children (and their parents) and risk of neglect more generally.

Besides reports, audits and inquiries about social services there are also health issues which refer to the *'at risk'* agenda. In such cases it is scientific research that refers to the circumstances which put children at risk of ill-health now or in later years.

- "Thousands of parents are unwittingly putting their children's lives **at risk** by incorrectly fitting child seats, or worse still, not using restraints at all. " The RAC Foundation reports …." (2005_08_19).
- "MILLIONS of parents may be putting their children **at risk** of becoming short-sighted by leaving the bedroom light on at night. Even a dim nightlight could be enough to triple the risk of short sight in later life, American researchers say" (1999_05_13).
- "Without early diagnosis and treatment, a child is **at risk** of developing respiratory problems such as pneumonia and bronchitis and the lungs may become damaged" (1999_11_16).
- "The report criticized parents who ignored health facilities such as immunization and put their children **at risk**" (1970_01_09).

In summary, the debate about *children at risk* is fostered by general social concerns about risk supported by national and international organisations which keep children at risk on the political agenda. There are all kinds of health and moral concerns about children. However, probably the most lasting and memorable debate has been the reporting on child abuse cases and related public inquiries about institutional child-protection arrangements. Children 'at risk' and 'at risk'-children have become a central element of the cultural repertoire, influencing the public understanding and debate about children.

4.6 The Ongoing Crisis of the National Health Service Exposes Patients to Risk

'*Patients*' are another social group the media presents as vulnerable. There is some overlap with the collocate '*lives*' since in most cases it is the lives of patients which is put at risk. There are two contexts in particular which present 'patients at risk'. Both are related to the National Health Service (NHS): (1) The quality and the costs of service delivery and (2) the ongoing industrial conflicts between staff and unions on the one hand and the conservative gov-

ernment on the other which occurred in the 1980s (1970s: f=34 [2.56/k], 1980s: f=89 [3.24/k], 1990s: f=136 [3.86/k], 2000s: f=193 [3.66/k]).

The NHS was established in 1948 as one of the major social reforms of the Labour Party after WWII and was driven by the ambition to establish a comprehensive, universal and free health service for UK residents. Already in the 1950s concerns about the growing costs of health care were publicly debated. Plans for and reorganization of the NHS in the 1970s and reforms of the conservative government aiming to intensify privatization and cost cutting in the 1980s were responsible for ongoing conflicts and debates and instantiations of *'at risk'* in news coverage. Independently, with the long-term increase of chronic illnesses and advances in pharmacy and treatments news coverage increasingly reports on new drugs and new treatments which promise to improve patients' wellbeing and increase the likelihood that conditions can be cured.

'At risk' co-occurs with 'patients' in two main ways. First, 'patients at risk' defines the status of a particular group which is 'at risk' because of circumstances and, for example, requires help. Occasionally there are a number of occurrences in which it is not patients themselves, but patient care more generally which is 'at risk'. Second, there is a construct which emphasizes the responsibility for patients being 'at risk'. In the construct 'put .. patients .. at risk' an agent is usually made responsible while in a small number of cases it refers to the general service conditions which require a response.

During the 1970s and 1980s *The Times* focuses particularly on doctors, nurses or other health staff who put patients at risk because of their strike activity. This was the case during the consultants' strike in 1975, the junior doctors' strike in 1975, and the nurses pay campaigns in 1982 and 1988. The news debated and challenged the moral standards of health workers who were on strike (Muyskens 1982; Hayward and Fee 1992):

- The chairmen of the five groups in the Birmingham Regional Hospital Board's area said yesterday that Monday's statement by 300 of the city's consultants that the dispute was **putting patients** increasingly **at risk** confirmed their own views (1973_03_14).
- In the Government's view it is indefensible that any **patients** should remain **at risk** while the discussions arranged by the review body take place and pending the further talks which the Government have offered to both junior doctors and consultants (1975_12_02).

This pattern reoccurred with the industrial action that took place in the early 1980s, and then again in the late 1988s when in a parliamentary debate Prime Minister Thatcher accused nurses of putting patients at risk:

- Thatcher criticizes nurses The Prime Minister yesterday accused striking nurses of **putting patients at risk** as the controversy over the health service again boiled over in the Commons (1988_01_15).

Some scholars point out that the government's attempt to discredit health worker demands for better pay and better working conditions was only partly successful. In contrast to the successful reframing of the minors' strike as unethical and posing a risk to the British economy (Arnold 2016), a similar attempt with the health sector was less successful. Finally, the argument that the industrial action of health staff would put patients at risk faded in the early 1990s and rarely re-occurred. In the following years the discourse shifted slightly. During the 1990s concerns about patients at risk relates to the increase of foreign doctors practicing in the UK, overstretched personnel, bad practice in hospitals and irresponsibly behaving doctors. Issues about bad practice in hospitals and by doctors include cases of failure of professional self-control. At the end of the 1990s and the 2000s there is a growing number of cases (one fifth) which focuses on **doctors as a risk to patients**, whether it is the lack of skills, inappropriate attitudes or even criminal activities such as the mass murderer Harold Shipman who was arrested in 1998 and triggered efforts to re-establish public confidence and trust in the health services (Alaszewski 2002).

- The report, by a working party chaired by Dr Kenneth Caiman, has been drawn up after a spate of cases in which patients were **put at risk** by doctors whose shortcomings were common knowledge among their colleagues (1995_08_08).
- The NHS Bill, to be included in the Queen's Speech on Tuesday, will include powers to expose doctors **at risk** of endangering patients (1998_11_20).
- Husband and wife GPs who put patients **at risk** at the nursing home they ran in Birmingham were struck off the medical register (2006_01_21).
- More than a third of GPs are unable to interpret their patients ' hepatitis C test results, potentially putting patients **at risk** of fatal liver damage, a poll by ICM Healthcare for the Hepatitis C Trust suggests (2008_08_12).
- Health workers have been blamed putting vulnerable patients **at risk** a worsening the winter's flu outbreak by refusing to have flu jabs (2009_02_28).

During the 1990s and early 2000s *The Times* repeatedly reported concerns about HIV infected doctors who might have transmitted their illness to patients. In later years hepatitis was included in reports of doctors unethically putting patients at risk of contracting illnesses.

- Patrick Ngosa, 39, who feared he almost certainly had the Aids virus, but continued to practise, was ordered to be removed from the register for putting his patients **at risk** (1997_03_12).
- Although there have been about two dozen publicized cases of HIV-infected health care workers who could have put patients **at risk** in Britain, no tracing exercise has ever found that they transmitted the virus to a patient (2000_10_06).

Another key topic in reporting on '*patients at risk*' from the 1970s to 2000s is issues about new drugs and treatments. These issues are emphasised more in later years when reporting on industrial action faded. There is no trend towards negative or positive reporting on new drugs or treatments to cure illness. Overall the prosody is generally positive, but mixed with high profile scandals. This is an interesting result because it contrasts with the findings of other studies (Hardy and Colombini 2011, 472; Hamilton et al. 2007, 178) which emphasise the negative meaning of risk in health contexts, but seem to have missed the positive prosody:

- A study at the University of California-Davis showed that a mug of cocoa or a bar of chocolate have a similar beneficial effect on the blood as a low dose of aspirin, which doctors already recommend to patients **at risk** of developing the disease (2001_09_04)
- Ministers believe that making regular checks on **at risk** elderly patients will dramatically reduce hospital admissions (2004_05_03)
- Merck, the German drugs group, knowingly put patients **at risk** by relying on limited animal studies to claim that Vioxx would not harm the human heart (2005_07_15)
- But doctors hope that the anticoagulant pill could also be used to treat thousands of other patients **at risk** from heart conditions and strokes (2008_03_10)

The positive prosody of '*patients at risk*' makes it into the news even against the dominance and priority of negative reporting as in the cliché of 'bad news is good news' (Kitzinger 1999, 62). Health issues are potentially relevant to everyone and health is an area of ongoing concern and development.

The original dominance of the possible effects of industrial action on patients' wellbeing disappeared in the 1990s and 2000s. The focus shifted instead to concerns about the quality of services, shortage of qualified staff, and issues related to the hiring of doctors from other countries.

4.7 The Social Contexts of Other Collocates

There are several other collocates which are frequently used in a variety of different contexts. Some, such as health issues, have already been discussed. However, most of them have some particular issues which make them stand out.

4.7.1 People

'People' are an increasingly more frequent collocate of '*at risk'* (1970s: f=89 [6.70/k], 1980s: f=194 [7.05/k], 1990s: f=217 [6.15/k], 2000s: f=405 [7.69/k]). Much like many other collocates, 'people' is a product of increased focus on different social groups being at risk which started with the institutionalisation of epidemiology and the concept of at risk populations/populations as being at

risk in 1930 and the 1950s. Besides 'people', from the 1960s onwards children/child, patients, babies, and women are amongst the strongest 'at risk' collocates. The more frequent use of the 'people at risk' expression reflects that the social groups who are reported about have become more diverse. However, there are two typical groups which appear regularly: *young* people and *old* people.

Some concerns about elderly people were formulated using the 'at risk'-construct in relation to dramatic historical events. In October 1973 during the war in the Middle East, oil prices quadrupled due to Arab countries' reduced supply to the West, and the UK government mandated reduction of the use of energy. Several articles referred to how elderly people would be put *at risk* by the shortage of gas and lower room temperatures resulting from reduced heating. Also, the extremely cold winter of 1978/79 when a blizzard hit the south of England on New Year's Eve causing widespread disruption triggered concerns about elderly people.

In contrast, the 'youth at risk' construct appeared for a different reason. During the International Youth Year in 1985 several charities working with *Youth at risk* were advertising for support, meaning that the 'youth at risk' construct occurred in the 1980s due to charities' media campaign, rather than a severe historical event.

In the mid-1980s the risk of *starvation* in Africa was a key issue in the media. In relation to the 1983-1985 famine in Ethiopia, the catastrophic Sudan famine in 1998, and famine in several African countries in 2005/6 reports used the idiom *'people ... at risk ... of starvation'*. 'Starvation' is a key collocate amongst the risks the media reports from the 1980s to 2000s.

Several health issues and diseases are also referred to using the generalised notion of 'people at risk'. In the 1980s people at risk is related to Aids (f=5). Later in the 2000s it is related to a number of different health issues such as osteoporosis (f=5), health (f=13) and heart (f=6; stands for *heart attack* and *heart disease*), and the possibility of 'developing' (f=9) an illness became a central issue. The analysis in the next section provides proof of the significance of health issues in the reporting of risks.

Again 'lives' is a strong collocate of people at risk who sometimes put their life at risk, often voluntarily but in most cases as a result of the actions of others. In the 2000s 'lives' is the strongest collocate of the *'people at risk'* construct which confirms the overall dominance of lives as collocate of the 'at risk'-discourse semantic.

In summary, the key collocates are young and old people at risk, people at risk of starvation and the overall scandal that sometimes people are put at risk (in the 1980s 'innocent' was also a significant collocate). Notably, there is a clear and growing affinity to health issues.

4.7.2 Women

'Women' are amongst the key collocates of 'at risk' from the 1970s to the 2000s (1970s: f=30 [2.26/k], 1980s: f=94 [3.42/k], 1990s: f=90 [2.55/k]). Additionally, even though 'women' is not amongst the ten leading collocates in the 2000s (2000s: f=120 [2.28/k]) there are a number of other collocates with women such as famine, breast, children, developing and health which link to the broad thematic range of issues that the reporting of 'women at risk' refers to. However, two thematic areas stand out: First, health issues and in particular 'cervical' and 'breast' cancer and 'developing' an illness. Second, issues related to the relationship between women and children, babies and pregnancy. Interestingly the focus on babies shifted. In the 1980s women are not responsible while in the 2000s four of five occurrences present women are presented as being responsible for putting their babies at risk:

- Pregnant women /put babies at risk by taking antidepressants (2005_09_01).
- THOUSANDS of women are putting their babies at risk of permanent brain damage by drinking more than the recommended level of alcohol during their pregnancy (2006_09_19).

This observation is in line with national and international debates about women and pregnancy which unanimously emphasise an increasing shift of responsibility for the well-being of the child onto the mother (Lupton 1999) and a stronger campaigning against women drinking and smoking during pregnancy (e.g. Hammer and Inglin 2014).

An institutional argument was also observable. In 2007 and 2008 the collocate 'mothers' occurred as part of a phrase 'put/putting mothers and babies at risk'. In all the cases the key topic of the news coverage is the quality of support provided by the NHS: shortage of midwives, overstretched maternity units, and neonatal services across England so the articles would put mothers and babies at risk.

4.7.3 Babies

Babies are of major social concern, and are viewed as in need of protection. Reporting about babies at risk is likely to trigger strong emotions. They can therefore add news value to topics which have already been reported (Loseke 2003; Kitzinger 1999). In support of such an argument, the collocate *babies* is linked to a number of key issues which stood out in different decades, such as causes of *disability* (1970s), *Aids* and other *infectious diseases* (1980s) and the *under-resourced NHS* (2000s). Besides these general issues one theme is exclusively a baby's issue: *cot death* emerged and triggered considerable public debate about its causes and the efficiency of child monitoring devices in the 1990s. However, this debate faded once knowledge advanced and technical solutions were found. What stands out across the different domains of reporting

is the tendency of the '*at risk'*-compound to occur in the context of research while the process of putting babies at risk is mainly bound to the professional context of the NHS as a central social institution tasked with managing harm und health risk but reported as being a source of risk itself.

The 1980s are characterised by concerns about babies developing an illness. Quite dominant in this respect is the possibility that they will develop Aids (f=6).

- **Babies at risk** of **developing** Aids have been placed with foster parents and one at least is likely to be adopted, in a pioneering scheme being run by a social work department (1987_03_28).
- The breakthrough means that family tests could be developed to predict whether individuals, including unborn babies, might be **at risk** of **developing** the condition (1988_07_25).

4.7.4 Workers

The collocate *workers* occurred at a low, yet statistical significant frequency (1970s: f=43 [3.24/k], 1980s: f=27 [0.98/k], 1990s: f=14 [0.40/k], 2000s: f=43 [0.82/k]). When workers collocate with *at risk* a variety of issues relate to *health* (illness and safety), *job insecurity* and *pensions*. During the 1970, a decade of massive industrial action in the UK (e.g. the Miners' strikes in 1972 and 1974 and massive unrest across Britain in 1978-79), *jobs* co-occur with *workers,* indicating the affinity between the two. However, the main focus in the related debates is on jobs rather than workers, showing that the news emphasises the *jobs at risk,* but not the *workers* themselves (!).

The deterioration of safety for Aid workers (Roth 2015) affected news coverage as well. *The Times* reports about the abductions and deaths of aid workers, emphasising that they are increasingly at severe risk when doing their job.

- Aid workers **at risk** The murder of Gayle Williams in Kabul has again drawn attention to the tragic muddle of aid and politics (2008_10_27).
- Fourteen international aid agencies, including Oxfam and Save the Children, warned yesterday that thousands of lives were **at risk** because aid workers and their vehicles were not being given enough access to the camps (2009_05_22).

4.7.5 Buildings

Buildings as a collocate of *'at risk'* occurred in news coverage over decades mentioning issues related to the safety of construction and health issues at work (such as asbestos). Most often *The Times* reports on old buildings at risk of demolition where private and public interest potentially come into conflict. This started in the 1960s.

- In September the owners gave notice of their intention to demolish Grosvenor House and other property on the site excluding the Malt

House. It was then that the council, considering the Malt House **at risk** made a **building** preservation order (1965_11_10).

- Insulation and power workers and men in the **building** trades were particularly **at risk** but tens of thousands of do-it-your-self enthusiasts who had used asbestos in their homes might also have endangered them-selves and their families (1976_04_28).
- "Not all historic buildings can be saved. By identifying **buildings at risk**, however, and analysing their problems we can work towards their preservation in a positive, dynamic way", a report in the bulletin concludes (1987_03_11).

Ongoing concerns about British heritage and foremost the growing number of buildings or scheduled monuments that were at risk as a result of neglect or decay resulted in a political initiative in the early 1980s. With the National Heritage Act of 1983 a social institution was founded and tasked with protecting historical buildings. With the founding of *English Heritage* (1984-2015, later *Historic England*),[16] reporting on buildings at risk became increasingly emphasised in *The Times*, indicating that these institutions efficiently contributed to fostering public debate about historic buildings. The institution's approach to risk became more formalised over the years, resulting in the publication of the first *Register of Buildings At Risk* in 1991. As a result, since the 1990s *buildings* has become a statistically significant collocate of *at risk* (1990s: f=111 [3.15/k], 2000s: f=84 [1.59/k]). Also, an 'at-risk register' was established, as discussed later.

The media discourse on 'buildings at risk' changed slightly during the 2000s. Starting with the most intense flooding event since the 1947 in autumn 2000, others followed in 2004, 2005, 2007, and 2009, pushing the risk of flooding onto the public agenda. Buildings at risk of flooding became newsworthy with the 2000 flooding which required government responses:

- Yet half the 90,000 British planning applications each year are for building on land **at risk of flooding (**2000_10_14).
- "… damage last year was the result of defective flood defences because it had been prevented from doing a follow-up study due to financial constraints and persistent flooding. The audit office document Inland Flood Defence claims that up to two million homes and buildings in England are **at risk of flooding**. The number is increasing constantly as developers build more property on flood plains. Many residents are not aware of the potential risk. Two in five of these households at risk did not know if their insurance would cover flood damage (2001_03_15).

[16] The Historic Buildings and Monuments Commission for England is an executive non-departmental public body of the British Government sponsored by the Department for Culture, Media and Sport which was created by the National Heritage Act 1983.

- Ban on building in high-risk flood areas STRICT rules to prevent developers from building on land **at risk from flooding** were introduced by the Government yesterday (2001_07_18).

Later in the decade the reporting shifted from the rather technical term 'buildings' to the emotionally loaded concept 'home'.

4.7.4 Home

In contrast to 'buildings' the 'at risk'-construct is related to the normatively richer concept of '*home*'. In the 2000s *'home .. at risk'* of flooding challenges feelings of ontological security, such as the feeling that '*home*' is a safe harbour or a secure basis which one could fall back on under any circumstances (Harries 2008). In contrast to many other European countries home ownership rather than renting is a status symbol of high value to the British culture:

- A man living more than 40 miles from the coast has seen the cost of his home insurance soar because an official warning wrongly stated that his home was **at risk** of flooding from the sea (2007_02_12).
- And homeowners will find it difficult to work out if their home is **at risk** from flooding (2003_01_04).
- It had come up through the floor and flooded the front room and other parts of the house It was an absolute nightmare. " like many thousands of homeowners, the Shrievers had little idea that their home was **at risk** from, flooding and the damage that increased rainfall and rising ground water could wreak (2002_09_21).

The section on reported risks will show that in the 2000s the risk of flooding indeed became the strongest collocated of 'at risk', emphasising the salience of home/buildings in the news coverage of the 2000s.

The centrality of home ownership for the British culture is also reflected in political efforts to increase home ownership. In the early 1980s, the Thatcher government promoted and financially supported home ownership with a program which supported people in buying council houses. Even though the program was taken up slowly at the beginning, at the end of the 1980s, with economic success, an unprecedented housing boom with growing housing prices and low interest rates developed. However, this was followed by a significant economic downturn. Increasing interest rates were followed by the highest ever rates of repossessions (even higher than during the 2009 global financial crisis). In this context concerns about 'loan sharks' and 'unscrupulous lenders' triggered new legislation which, amongst other things, required that advertisements for loans clearly indicate the risks that they pose via the inclusion of a compulsory sentence:

- "the Consumer Credit (Advertisement) Regulations (SI 1989 No 1125), coming into force on February 1, 1990, requiring advertisements for loans secured by way of a mortgage or charge on the debtor 's home to

include the statement: "Your home is at risk if you do not keep up repayments on a mortgage or other loan secured upon it" (1989_12_13).

Due to the new legislation, *'home at risk'* occurred in large numbers from the 1990s onwards and results in the high collocation of 'home' with 'at risk' (1990s: f=3087, 2000s: f=2733).

In summary, 'home' is a culturally highly valued concept which links to ontological security (Giddens 1991: 13) and feelings of safety and protection. As a consequence of this, concerns about a housing bubble triggered new legislation responsible for a huge volume of risk communication.

4.7.5 Safety

The notion of safety (1970s: f=8 [0.60/k], 1980s: f=44 [1.60/k], 1990s: f=58 [1.64/k], 2000s: f=96 [1.82/k]) links 'at risk' to a number of technical issues such as the safety of buildings, safety at work, of public transport, and aviation, as well as to social services and child protection. Safety also collocates with risk in the context of industrial action where accusations of putting vulnerable people's safety at risk are made. This is not restricted to the health context. It includes other occupations which are meant to care for the safety of people such as fire fighters and security personnel.

News coverage of *safety at risk* often connects the notion of risk to major (technical) disasters. For example, the Zeebrugge ferry disaster of the MS Herald of Free Enterprise, a roll-on/roll-off ferry, capsized after leaving the Belgian port of Zeebrugge on the 6th of March 1987 and killed 193 passengers and crew. This was a particularly traumatic event for the British public since almost all of the victims were from the UK. The owner of the ferry, P&O, was subsequently accused of putting passengers' safety at risk. A key narrative which is also repeated in other domains such as health services and public transport (rail services, aviation) is about cost cutting and its relationship to overworked and insufficiently qualified employees who put patients, the public or commuters using train services at risk. The latter refers to debates about the privatisation of rail services. After the incident near Clapham Junction at 12 December 1988 which caused the death of 35, service quality has been a key issue which has been widely debated. In respective lawsuits both British Rail and Great Western Trains were fined for jeopardising safety.

In the 1990s '*passengers'* became a collocate of safety at risk due to concerns about aviation safety and debates about safety in connection with the railway companies since the 1990s saw further crashes. In particular the crash at the Ladbroke Grove Junction outside Paddington Station on 5th October 1999 in which 30 people were killed and 245 were injured left its mark (Hutter 2001).

- In the leading article: 'GREAT Western Trains was fined a record 1.5 million at the Old Bailey yesterday for jeopardising **safety** and putting

passengers **at risk** in the Southall rail crash that killed seven people. The company was guilty of a "dereliction of duty" in connection with the disaster in West London in which 150 were injured and millions of pounds of damage was caused in September 1997, the court was told.'

'Safety being put at risk' has become a general idea used in highlighting all kinds of risk issues. Therefore, a number of new issues entered the debate. Technological concerns about nuclear power are replaced by pipeline safety, while a variety of other issues such as terrorism and war, and sport and player's safety were key issues as well. Safety concerns about aviation and public transport were continuous, although less emphasis was placed on rail services when compared with automobiles and aviation. Health services remain a strong ongoing theme, while social services clearly decreased. A particularly notable difference when compared to earlier decades is the emergence of concerns about the media related to safety. These issues range from claims that professional practice is in need of protection, to claims that people (for instance, Prince Harry) are endangered by media coverage.

However, if there is a trend which distinguishes the 2000s from earlier decades then it is the tendency to report on everyday issues and an individual perspective, referring to the 'put safety at risk' idiom:

- Her best friend is beaten up and her young daughter's safety is put **at risk**. The initial premise that Peter's enemies are seeking revenge on him, through his wife, becomes increasingly unlikely (2000_02_12).
- The girls say they always stop drinking before losing control, "chucking" (being sick) or putting their safety **at risk**. Fiona remembers a 13-year-old friend who drank a bottle of wine and got really out of control, she started running around after me and my friends with a knife (2000_07_08).

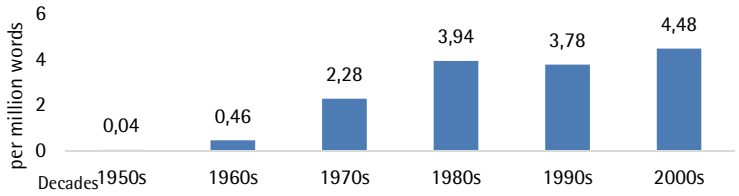
5. Being Put at Risk

Amongst the above examples were formulations which combined at risk with 'put', 'putting' and 'puts'. The comparatively high log ratio values, for example for the 2000s, indicate the relatively strong affinity of 'putting' (LR 7.3), 'put' (LR 6.0) and 'puts' (LR 6.8) to the 'at risk'-construct compared with auxiliary verbs such as 'be' (LR 2.1), 'are' (LR 3.0) or 'is' (LR 1.4). Since such function words are highly used expressions in all kinds of contexts this is not surprising. However, the occurrences per million words of the compound '{put} ***** at {risk}'[17] as shown in the figure below suggests that in the news coverage of *The Times* there is an increasing volume of reporting on people

[17] Lemma 'put' + up to five words + at + lemma ‚risk'.

who are put at risk by others or by circumstances, or are putting themselves at risk. This contrasts with situations which describe people as being in a situation of risk without grammatically referring to an agent or cause.

Figure 5: Occurence of '{put} ***** at {risk}' per Million Words in *The Times*



Thus, over time, reporting increasingly stresses the link between an agent (most of the time others, but also the person herself/himself) and an object (mainly people/persons) exposed to risk. This observation supports the view that '{put} ***** at risk' is one driver of the increase of the 'at risk'-construct from the 1960s to the 1980s. The 'scandal' of unreasonably put at risk appears to be one defining meaning of the 'at risk'-construct.

6. Hyphenating 'at Risk'

The hyphenation of 'at risk' is a relatively recent development mainly observable since the 1980s. 'At-risk' only occurred occasionally before this, once in 1967, twice in 1970 and 1975 and once in each of the years 1976, 1977 and 1979. In the 1980s there were already about 11 different at-risk + noun combinations. Many occurred only once, while about half of them (f=21) referred to 'at-risk register'. In the 1990s the picture was similar but the different forms increased to 17 occurrences of at-risk + noun. Since the absolute numbers of 'at-risk register' only increased slightly (f=24) its relative frequency dropped to 41 per cent. The 2000s witnessed a strong quantitative increase in, as well as growing variation of at-risk compounds. While the use of 'at-risk register' more than doubled (f=58), its proportion of all hyphenations dropped to about 20 per cent. About 15 per cent are 'at-risk groups', 5 per cent each 'at-risk children', 'at-risk patients' and so on (compare table). Overall, 74 different at-risk + noun combinations are observable. They refer to humans (groups, children, patients, group, babies, population, people, individuals, girls, women, child, customers, family, infants, mothers, pupils, young), to animals (species, animals), to things (areas, mortgages, monuments, regions) and to technical expressions which measure and categorise (register, lists, category).

Table 3: Nouns Following at-risk, decades 1980s, 1990s, 2000s

1980s	1990s	2000s
register (21), groups (2), women (2)	register (24), groups (3), patients (3), cattle (2), group (2), list (2)	register (58), groups (43), children (16), patients (14), group (8), areas (7), babies (7), population (6), people (5), individuals (4), species (4), category (3), girls (3), mortgages (3), women (3), animals (2), child (2), customers (2), family (2), infants (2), monuments (2), mothers (2), pupils (2), regions (2), young (2)
Only once:		
cases, children, families, heterosexuals, list, patients, registers, specialties	areas, category, clientele, genes, lambs, monuments, patient, registers, women, young, zone	18-year-old, area, artefact, baby, bands, behaviour, boys, breeds, butterflies, cattle, countries, couples, four-year-olds, herbs, homes, hospitals, house, household, households, Iraqi, lists, livestock, members, minority, part, patient, person, personnel, players, populations, poultry, premises, products, programme, project, registers, rock, school, sites, sports, states, sub-groups, suppliers, teenagers, teens, tenants, workers, youths
N=33	N=47	N=256

How can the hyphenation of 'at risk' be explained? There are several possible reasons for it, two are linguistic, one is systematic grammatical and one is practical/historical. There reasons are now each addressed in turn. The Guardian online style guide suggests that "hyphens should, however, be used to form short compound adjectives, e.g. two-tonne vessel, three-year deal, 19th-century artist". Consequently, 'at risk' should be hyphenised when turned into an adjective to characterize a particular quality of an entity or social group such as at-risk youth, or at-risk buildings or at-risk lists following the rule that in prenominal usage (before a noun) hyphenation is required. The very early use of 'at-risk' supports this argument: 'At-risk' characterizes the quality of a group (at-risk migrants) or things (at-risk commodities). It refers to a specific institutional practice (at-risk register), and in some instantiations, it characterizes a process which puts a valued object (person, social group or thing) at-risk (The Queen, New York Airport, annual income).

However, this does not explain the huge increase of adjectival constructs in recent decades. The Guardian's style guide also suggests a historical argument for hyphenation:

> Inventions, ideas and new concepts often begin life as two words, then become hyphenated, before finally becoming accepted as one word. … "Wire-less" and "down-stairs" were once hyphenated, and some old-fashioned souls still hyphenate e-mail".

If this argument is true for 'at risk' then the compound has just reached the second stage of hyphenation (to express the quality of a thing).

However, the rapid increase in the quantity of at-risk, as well as the context in which it is used, does not seem to result from linguistic convenience – refer-

ring to a social practice which has become common. Instead, there might be support for the argument that two different developments have combined in establishing a new, systematic way of thinking about the world. This argument builds on the idea that there are identifiable and separable factors which make the future predictable and manageable, and that the fate of human beings or physical entities likewise can be identified and determined by such factors, determined through their at-risk status. Consequently, there are 'at-risk girls', 'at-risk' mortgages, 'at-risk' animals, 'at-risk' customers, 'at-risk' monuments, 'at-risk' regions, 'at-risk' artefacts, 'at-risk' bands and so forth.

The provided data support the view that this new way of thinking is fostered by two developments. First, institutional practices to identify entities (people, groups, things, regions) as vulnerable or in need of protection which become part of a register or list such as the 'at-risk register'. Second, the application and spread of epidemiological knowledge to all kinds of social issues, which identifies the factors that determine the character of a social entity using scientific evidence. Thus, a systematic administrative approach combines with scientific technology and thereby allows a practice to spread on the basis of a mechanistic, objectivist worldview. Indeed, public debate was shaped by both the increasing application and the (alleged) limits and the failure of such approaches to social reality.

Historically, the instantiations of 'at-risk register' in the 1980s was clearly linked to a number of high profile child abuse cases and related public inquiries. Child abuse had been an issue for quite a while. In the 1970s the modern child protection system, which rests on centralized child abuse registers, had been established (Jones et al. 1979). However, throughout the 1980s and in later decades the media reported on cases such as those of Jasmine Beckford, Tyra Henry, Heidi Koseda (all 1984), Kimberley Carlile (1986), and Doreen Mason (1987) who all died as the result of abuse and neglect and raised public debate about the efficiency of the existing system. Court cases on child abuse and deaths of children, the public inquiries assessing the practices of the child protection system and the legislative revisions and new frameworks at the end of the 1989 and during the 1990s provided the context against which news coverage continuously reported on new cases, challenging the efficiency of the child protection system and the at-risk registers.

In the 1990s this stream of inquiries into child abuse cases continued. There is evidence that the notion of the 'at-risk register' has become a more commonly used concept. For example, an 'at risk register' was set up for nurses in hospitals to indicate the need for extra effort to find new jobs for them after the expected down-scaling of hospital services. In the late 1990s the hyphen was also used for the at-risk register for historic houses and debates about taking buildings on and off the register. Occasionally the English Heritage's at-risk register still makes it into the news.

With the 2000s the notion of the at-risk register has become a known part of the socio-cultural knowledge. For instance, an article published at 24 September 2001 ironically suggested sending Americans to an anger management course and putting those who were socially excluded in Afghanistan or Iraq on an at-risk register. Several articles problematise at-risk registers, debating structural issues (i.e. how many children are on the register) or highlighting cases in which children or parents were erroneously added to a register. Finally, in 2008 a new debate about voluntary workers helping families to manage life challenges and family obligations suggested a shift away from thinking about child-abuse and neglect in terms of risk-registers in favour of the provision of greater support.

The second most common noun is at-risk 'groups' followed by 'children', and 'patients'. The expression at-risk group(s) is mainly used in health contexts underpinned by an epidemiological mindset in which particular group(s) are considered in need for vaccination or unable to receive vaccination. Debates are predominantly about flu vaccination, but also refer to other illnesses. Several other health issues ranging from food supplements, heatwaves, sunsmart/cancer campaigning, unemployment linked to disability, mental illness, war time evacuation before the Blitz and national funding of particular sport have also accompanied at-risk groups. Though the concept occurs frequently in medical contexts, it is occasionally applied to a variety of other social groups and even a sport is characterised as at-risk. On the whole 'at-risk' predominantly identifies social groups which are vulnerable due to conditions or circumstances that they are not solely responsible for.

The phrase "at-risk children" links to abuse and debates about keeping children with their families, but also connects to other issues such as failures to protect children. In contrast to the 'at-risk register' which dominates the social work/social protection context the notion 'at-risk list' is semantically more open and links to all kinds of issues from life style, to insurance, world heritage, dogs and species at risk, (although it is not used in health contexts or discussions of child abuse. The hyphen is also occasionally used to characterise mainly animals and occasionally plants as 'at-risk species'.

In summary, the increasing variety of 'at-risk' combinations and the jump in frequency in the 2000s supports the assumption that the concept is generally known and routinely applied to all kinds of social contexts in the 2000s to characterise social groups or other things by their vulnerability or at-risk status.

7. Different Connections of Linguistic and Social Change

The article has argued that 'risk words' are a valuable starting point to explore historical change in the meaning of risk and related social contexts. It examined one key aspect–the 'at risk' construct–which increasingly occurred in news

coverage after the 1960s. The analysis has shown that social changes and linguistic changes are connected on various levels, and in different ways. Single events, as well as large scale social transformations, influence the use of language and thereby reflect public debates as well as social awareness more generally. The analysis of media coverage has identified systematic differences between 19th century and 20th century use of the 'at risk'-construct. It has also identified both large scale social transformations and singular events in the co-text of risk words within the 20th and early 21st century which are characteristic for a specific discourse-semantic regime of dealing with and reporting about risk in the public sphere.

The analysis of the valued objects 'at risk' has shown that early public reporting refers mainly to the economic realm and trading practices. The early 20th century news coverage is characterised by words such as freight, amount, cargo, value, property, and sum being 'at risk'. In the 1930s and since the 1950s the institutionalisation of epidemiology as a scientific discipline influenced news coverage at the time. The concept of an at-risk population was introduced and regularly used, reflecting a new and powerful form of reasoning and knowledge to deal with the ill health of populations.

Since the 1970s a new pattern is observable. This pattern is characterised by four key words co-occurring with 'at risk': jobs, lives, children and patients, which characterise a new social reality reflected in news coverage ever since. With the 1970s concerns about 'jobs' continuously reported as being 'at risk' reflects a fundamental shift in the experience of work. The fundamental transformation of the economic sphere, the deregulation of labour, and the loss of the full-time life-long employment has shifted the experience of work. This shift has been connected to the miner's strike and strikes in the health sector in the 1980s, and the transformation of the British economy during the Thatcher era.

'Lives at risk' refers to people who put themselves at risk, or are involuntarily and unreasonably put at risk by others. '{put} at risk' is a key construct of increasing frequency in news coverage emphasising the moral expectation of risk to be prevented and reduced. This discourse is accompanied by reporting which chronicles professional who engage in risk taking behaviour in order to save the lives of others.

The next two collocates refer to specific social groups considered vulnerable to risk: children and patients. Children are a key domain of public concern addressed in articles about proper parenting, amongst other things. A key and historically influential debate was the struggle about child abuse and neglect - how to deal with it institutionally, and alleged institutional mismanagement.

The reporting of 'patients at risk' refers to people's role in relation to health services and the advancement of medicine. Two themes are central in this respect. First, the quality of service delivery by the National Health Service (NHS) and industrial conflict in the 1980s are considered to have negatively

affected service delivery and potentially put patients at risk. Second, debates about drugs and treatment technologies which are meant to either cure patients or improve their well-being and the scandals around these areas.

The less frequently occurring collocates link 'at risk' to several different issues. Amongst these are relatively short-term concerns related to old and elderly people, the debate about cot-death, the safety of passengers after ferry and rail disasters, and homes at risk of flooding after repeated experiences of flooding in the UK in the 2000s. Single events such as accidents and disasters contribute to ongoing concerns. For example, ferry and railway disasters contribute to the discourse of passenger safety. The repeated flooding experienced in the 2000s has been linked to climate change and has led to the expectation that bad weather events will become more regular and require preparation and precaution.

The analysis of what people or valued objects are at risk of clearly shows that there are ongoing and unresolved issues recurring in media reporting. Some of these issues include (infectious and chronic) diseases such as heart diseases/attacks and cancer, abuse and neglect of children, starvation in particular in Africa and the extinction of species (in particular animals). The news media keep reporting on these issues due to the repeated occurrence of newsworthy events which link to a broader discourse. For example, another horrible famine in Africa links to debates about the inefficiency or even harmful effects of foreign aid which has been criticized continuously. The severe and repeating floodings the UK witnessed during the first decade of the 21st century linked to the broader debate about the effects of climate change. Housing crisis, companies and banks collapsing and redundancies connect to the broader debate about the negative effects of economic globalisation driven by the anti-globalisation movement and public intellectuals criticising policies of international institutions such as the World Bank, the International Monetary Fund, The OECD and WTO amongst others.

At the same time, technological innovation such as the availability of affordable and reliable contraception during the 1970s has contributed to fundamental social change. Indeed, the example of contraception illustrates the way in which key issues–such as unwanted pregnancy–are reported on at a time when a solution to them appears to be available. As long as issues are in the realm of fate and luck they are not reported in a risk framework. With a technical solution available public debate and the media keep it on the agenda until the issue seems resolved.

Finally, the subtle change of hyphenating the 'at risk'-expression indicates that there might be a very recent shift in the usage of the concept itself. 'At-risk' was originally used mainly in the context of at-risk registers for children at risk of abuse and later, from the 1990s, to identify English Heritage buildings at risk. The institutional practice of managing child abuse or English heritage kept the 'at-risk' semantic in the media. However, the article suggests that

the steep increase of hyphenated 'at-risk' in 2000s and its use in an enormous variety of contexts goes beyond the institutional practice of 'at-risk'-registers and 'at-risk'-lists. Instead, it might be an indication for a new social awareness becoming more wide-spread. This is about identifying the quality of a social group or thing by its at-risk status.

It is likely that such a shift in social awareness links to broader social changes rather than to either the risk-registers used to manage child abuse or English heritage more specifically. The proliferation of a systematic way of thinking which characterises and manages populations through their risk status is typical for an epidemiological approach to social reality. The strong affinity of 'at risk' to issues of health and illness supports such a view. However, such an approach goes beyond a mathematical perspective. In many cases 'at risk' is not underpinned by probabilistic knowledge. It is instead informed by a possibilistic perspective in which uncertainty and 'soft' (e.g. tacit) knowledge dominates. Such a reading supports Weber's (1948) suggestion that social rationalisation is about a worldview or approach to social reality which is applied even when conclusive knowledge is not (yet) available. It could be added that it is about the proliferation of a world view which characterises the future by what could happen to valued objects of the social world.

9. Conclusions and Perspectives

The article presented a historical analysis of language and discursive change in *The Times*. It utilised linguistic tools such as *collocations* and *concordances* to explore how the usage of a specific construct, 'at risk', has developed from 1785 to 2009 in its social contexts. The purpose of the study was to contribute to debates about long term social change which have driven sociological controversies about risk. The analysis showed that the semantic space which instantiated the 'at risk'-construct is linked to a specific form of knowledge (statistics, probability), and institutional practices to manage social issues (e.g. at-risk registers to manage child abuse and English heritage buildings). Yet ongoing social challenges such as civilisation and chronic illnesses (e.g. heart diseases, cancer) or new threats such as flooding in a climate change world are issues supported by a stream of events feeding into a larger narrative. Furthermore, the exposure of people to risk is an ongoing issue which occurs frequently, and more often especially in later decades, in news coverage. This supports the view that involuntary and unreasonable exposure to risk is a newsworthy story which regularly makes it into the news.

The role of the media in shaping public debate about risk and the risk agenda has not been well conceptualised in mainstream theories on risk in sociology (Lupton 1999). The study supports the view that key social concerns are well reflected in media coverage even when there are internal standards of news-

worthiness which preference reporting on specific hands-on issues rather than abstract possibilities (Kitzinger 1999). Typical global, unspecific risks such as climate change or the loss of species become reportable events through repeating flooding and reports of species at risk of extinction provided by expert groups.

It is reasonable to assume that the 'at risk'-language in reporting on health is shaped by the language of the professional context which these articles refer to. Research in media studies has suggested that with increased pressure on news production, press releases provided by professional organisations, companies and NGOs, and science as a high trust source of news, are regularly used by journalists to produce news (e.g. Bell 1991; Conboy 2010; Anderson, Petersen and David 2005). As a result, the risk language of these contexts might have travelled into public debate through the media production practice which increasingly relies on press releases. Even though his might help explain how a probabilistic notion of at risk entered the media, the possibilistic notion of 'at risk' might follow a different rationale. Altogether, the salience of the 'at risk'-language in the media refers to concerns about possibilities which are based on concrete events and disasters, scientific research and evidence, and known issues. Even when single articles might exaggerate, or evidence might be flawed, the social issues they refer to are real. The possibility of being exposed to serious risk involuntarily and by others or that vulnerable people such as children will be unknowingly exposed to risk is newsworthy in a modern world which is driven by the ambition, and indeed the expectation, to rationally control the world. In this way, reporting on risk is not only *probabilistic* as in epidemiology or *possibilistic* as general concerns, it is also '*consequential*' in highlighting the serious disasters and harm which happened as a result of negligence, ignorance or misinformation which comes with the moral imperative to do something about it in order to prevent and minimise risk.

The study has some systematic limits to keep in mind. The restriction to 'at risk' constructs does not allow much to be said about other aspects of the semantic space of risk. While it indicates a possibility for applying historical analysis, it is important to extend the analysis to related concepts such as threat, danger, peril etc. to clarify how such concepts relate and are instantiated in different contexts. Such an analysis would then allow for systematic identification of evidence for scholarly claims of a shift towards a world mainly concerned with new mega risks (Beck 2009). The present study contributes to the debate by producing some evidence, but restricts itself to risk words.

The Times provides a good source for historical analysis because of its influence on public debate and its broad scope. However, a systematic comparison with other newspapers would allow for confidence about the degree to which such assumptions are justified. Finally, the data quality of *The Times* corpus is a source of uncertainty. Since the analysis tried to rely as little as possible on statistical and grammatical fine-grain analysis in order to prevent

too much opportunity for systematic biases caused by OCR mistakes and related issues, all the results may be carefully considered as hypotheses to be further explored in future research.

Considering all these limitations the article hopes to demonstrate new avenues for future socio-historical research. It therefore provides the first step in a research program to be developed rather than comprehensive answers to complex social changes. Ultimately, it developed empirical hypotheses based on systematic empirical analysis to be supported or rejected by further research as the availability of data and the sophistication of research instruments develop.

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Appendix

1900s (391,479,119 words in corpus)

	ALL	OCF	LL	LR
Freight	11553	70	1.039.995	12.092
Amount	111646	16	116.845	6.681
Cargo	19554	7	63.777	8.002
Amounts	16970	5	43.599	7.721
Value	110935	6	32.236	5.275
Property	100174	4	19.125	4.838
Interests	61878	3	15.468	5.118

Coll. left 5 to 1, node min. 3, LL 13.53473, p<0.05

1910s (355,970,702 words)

	ALL	OCF	LL	LR
amount	101167	12	99.709	7.405
value	113195	8	58.149	6.657
amounts	18744	4	37.841	8.252
property	79757	5	35.131	6.484
sums	11420	3	29.602	8.552
freight	15247	3	27.862	8.135
capital	105260	3	16.408	5.347

Coll., left 5 to 1, node min. 3, LL 13.23849, p<0.05

1920s (477,218,303 words)

	ALL	OCF	LL	LR
amount	110681	11	101.984	8.095
sums	15277	5	58.048	9.815
sum	60332	3	23.596	7.096

Coll. left 5 to 1, node min. 3, LL 12.99266, p<0.05

1930s (501,409,309 words)

	ALL	OCF	LL	LR
amount	114214	12	100.417	7.452
sum	54179	6	50.759	7.528
population	28336	5	46.927	8.200
sums	15977	4	40.312	8.705
amounts	21185	3	26.833	7.883
value	202655	4	20.221	5.040
property	106534	3	17.240	5.553

Coll. left 5 to 1, node min. 3, LL 13.69878, p<0.05

1940s (165,749,874 words)

	ALL	OCF	LL	LR
Amount	48092	6	49.201	7.332
Values	9183	4	42.759	9.136
Amounts	11233	3	29.116	8.430

Coll. left 5 to 1, node min. 3, LL 12.73628, p<0.05

1950s (254,704,166 words)

	ALL	OCF	LL	LR
Capital	128936	17	123.737	6.657
Population	18854	7	65.253	8.151
Values	14840	6	56.917	8.274
sums	9420	5	50.149	8.667
amount	62584	7	48.543	6.420

Coll. left 5 to 1, node min. 3, LL 13.87854, p<0.05

1960 (329,515,348 words)

	ALL	OCF	LL	LR
sums	9723	13	113.769	7.746
population	25692	14	97.558	6.450
lives	16209	12	90.892	6.892
money	97047	14	61.223	4.532
life	126097	15	60.087	4.254
people	197565	17	57.775	3.786
amount	60599	10	46.300	4.726
capital	145952	13	45.002	3.836
women	69516	10	43.666	4.528
mothers	4556	5	41.778	7.461

Coll. left 5 to 1, node min. 5, LL 16.51379, p<0.05

1970 (328,892,369 words)

	ALL	OCF	LL	LR
jobs	39777	135	1.032.646	6.944
children	98193	129	744.846	5.572
lives	19213	63	477.257	6.894
people	265620	89	281.215	3.599
patients	13642	34	238.996	6.497
workers	81342	43	172.372	4.257
child	33466	26	123.353	4.813
babies	3584	15	120.867	7.247
future	95644	34	111.013	3.684
life	132540	37	104.548	3.808

Coll. left 5 to 1, node min. 15, LL 18.49689, p<0.05

1980s (381,591,166 words)				
	ALL	OCF	LL	LR
jobs	45329	356	2.882.844	7.271
lives	26981	196	1.555.579	7.158
children	107525	184	935.551	5.064
people	295528	194	633.056	3.680
patients	20150	89	617.998	6.436
babies	5450	51	430.270	7.526
women	106545	94	358.301	4.107
safety	24830	44	226.494	5.114
child	45871	48	198.409	4.353
health	79774	52	168.780	3.670
Coll. left 5 to 1, node min. 40, LL 19.43029, p<0.05				
1990 (520,734,179 words)				
	ALL	OCF	LL	LR
jobs	45719	381	3.211.371	7.513
lives	54998	280	2.084.329	6.797
children	189609	244	1.156.982	4.808
patients	27746	136	1.001.606	6.742
build-ings	26178	111	785.476	6.532
people	434279	217	642.369	3.442
safety	36277	58	299.122	5.121
women	177598	90	268.455	3.462
life	337038	110	242.351	2.827
health	111437	68	225.979	3.730
Coll. left 5 to 1, node min. 50, LL 19.66821, p<0.05				
2000 (605,783,152 words)				
	ALL	OCF	LL	LR
jobs	53970	431	3.311.003	6.973
lives	83846	466	3.244.459	6.446
children	266532	489	2.341.698	4.842
patients	44097	193	1.251.504	6.010
people	581984	406	1.203.907	3.445
home	457800	291	813.405	3.311
health	151651	158	585.137	4.024
build-ings	26104	84	493.646	5.654
safety	45108	96	486.653	5.056
homes	67423	85	345.301	4.030
Coll. left 5 to 1, node min. 80, LL 20.15964, p<0.05				

ALL: Frequency in whole corpus
OCF: Observed Collocation Frequency
LL: log likelihood
LR: log ratio